Soviet Statistics of Physical Output of Industrial Commodities

Their Compilation and Quality

GREGORY GROSSMAN

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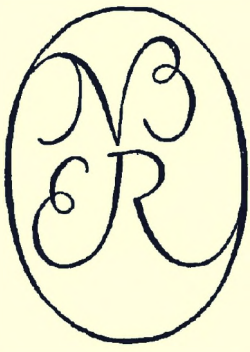

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SOVIET STATISTICS OF PHYSICAL OUTPUT OF INDUSTRIAL COMMODITIES

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(*Resolution adopted October 25, 1926 and revised February 6, 1933 and February 24, 1941*)

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Foreword

THIS book inaugurates a series of publications on Soviet economic growth, presenting the results of a research effort initiated six years ago by a grant from the Rockefeller Foundation. As now planned, the series will consist of monographs covering industry, agriculture, and transportation, followed by a summary volume that will try to integrate the major findings for these and other sectors of the Soviet economy. The focus of the series will be on the economic performance of the Soviet Union as reflected in the statistical record.

It is fitting that the series be introduced by a discussion of the quality of some of those statistics: how they are collected, processed, and published. The Westerner needs this introduction because he cannot easily picture the peculiar conditions under which statistics are demanded and supplied in what Professor Grossman calls a "command economy." As Grossman stresses throughout his study, reliability of data is a problem not only to the outsider but also to the Soviet administrator himself, a problem continually emphasized in the Soviet literature. Everybody seems to have a stake in the figures, those who report them as well as those who process and use them. And the absence of a free and critical press, competitive scholarship, and rival political groups puts the official statistics, with their inevitable faults, beyond the pale of effective public scrutiny.

The result is a set of economic data that Soviet officials and foreign observers alike must treat with circumspection, depending on the uses to which they are to be put. In Grossman's closing words, "One question must always be uppermost in the investigator's mind: what are the figures trying to prove?"

While Professor Grossman's study is limited to industrial statistics—and here only to certain aspects—many observations and conclusions are widely applicable to Soviet economic data in general. Thus, this carefully documented study fills an important gap in the Western literature on the Soviet economy while also serving as a model to encourage further work of a similar kind. It is through such attention to the foundation that a sturdy structure gets built.

G. WARREN NUTTER
Director, Study of Soviet Economic Growth

Charlottesville, Virginia

Preface

THIS study has benefited greatly from the cooperation of a number of persons and institutions. Robert M. Slusser, then associate director of the Research Program on the USSR (New York), kindly lent me the manuscripts of several studies prepared by émigré scholars under the auspices of the Program. Of these, Valentin Tsonev's "Falsification of Soviet Industrial Statistics" proved to be particularly useful, as did the opportunity to discuss the problem with Mr. Tsonev in person. My former colleague, Donald R. Hodgman, now of the University of Illinois, generously turned over some of his notes and working memoranda for my use. Benjamin Ward and Jeremiah Schneiderman assisted in the bibliographical search at the beginning of the study. Edgars Dunsdorfs (Melbourne), Andrew G. Frank (Michigan State), Marshall I. Goldman (Wellesley and Harvard), David Granick (Wisconsin), John P. Hardt (Corporation for Economic and Industrial Research), Donald R. Hodgman, Naum Jasny (Washington, D.C.), B. P. Martschenko (Toronto), G. Warren Nutter (Virginia; director of the National Bureau's Study of Soviet Economic Growth), and Raymond P. Powell (Yale) commented on all or parts of this essay at various stages of its preparation. Marie-Christine Culbert edited the manuscript in a most thorough and efficient manner. H. Irving Forman drew the charts. To all these persons go my thanks for their valuable help. To the National Bureau itself goes my full appreciation for initiating, sponsoring, and publishing the study. I am also thankful to the Bureau of Business and Economic Research of this university for typing assistance.

This essay follows the Library of Congress system of transliteration from the Russian, except for the omission of diacritical marks and ligatures. At the end of the volume there is a list of abbreviations of both Russian terms used in the text and Russian periodicals cited.

GREGORY GROSSMAN

Berkeley, California
November, 1959

SOVIET STATISTICS OF PHYSICAL OUTPUT OF INDUSTRIAL COMMODITIES

Introduction

THE purpose of this brief study is to inquire into the reliability and general usability of Soviet statistics of the *physical* output of industrial commodities, with particular reference to the period beginning with the Five-Year Plans. Although I shall not be directly concerned here with the reliability of Soviet indexes of industrial production or of similar aggregative measures—a problem that has already received careful attention in the Western literature on Soviet statistics,[1] a major reason for this study is obviously to provide an additional basis for the interpretation of such aggregative series, whether the official Soviet ones or those computed by independent scholars on the basis of Soviet physical output data.

In virtually every case the physical output datum, whether an absolute figure or a relative (percentage), is revealed to us by a Soviet source, such as a statistical handbook, an official announcement, a speech, an article, or a radio broadcast. The revealed datum is what we have. Our problem is to find out whether it is a reliable representation of the actual event or situation that it purports to represent; and further, for any given time series of output figures, how the degree of reliability varies over time.

The revealed datum is not a first-hand representation of the actual event. Unless simply invented at publication, it is presumably taken, with greater or lesser fidelity, from statistics compiled for the official use of the authorities at some administrative level (all-union, republic, *oblast'*, etc.). But these statistics themselves are not a first-hand representation of the actual event. Rather, they are the end result of a complex, multistage flow of statistical data, which begins with the primary entry in immediate contact with some element of the actual event and passes through enterprises, the economic-administrative hierarchy (trusts, ministries), and a succession of statistical bureaus.[2] At various points in the course of this flow the data are recorded, re-recorded, reported, consolidated

[1] See, for example, A. Gerschenkron, "The Soviet Indices of Industrial Production," *The Review of Economic Statistics*, November 1947, pp. 217-226; N. Jasny, "Intricacies of Russian National Income Statistics," *Journal of Political Economy*, August 1947, pp. 299-322; D. Hodgman, *Soviet Industrial Production, 1928-1951*, Cambridge, Mass., 1954; and A. Nove, "'1926/27' and All That," *Soviet Studies*, October 1957, pp. 117-130. It may be noted at this point (the subject is treated in greater detail in Chapter 5 below) that the distinction between aggregative (value or index) series and series in physical units is not a sharp one.

[2] See Chapter 3.

with other data, and otherwise processed, and at any such point they may be accidentally or deliberately distorted. As we shall see, of all the stages in this flow, one of the most crucial ones is the reporting of output data by the producing enterprise to its administrative superiors, to statistical agencies, and to certain other entities.

If the purpose of this elaborate recording and reporting activity were merely to prepare statistical compilations for the use of scholars, or even for the exercise of indirect (e.g. monetary) controls in a market economy, and if the government that collected and published the data had no special stake in the image of its country that it presented to the world at large, the problem of reliability would hardly go beyond such considerations as the logic and rigor of industrial classification, the conscientiousness of the recording and reporting personnel, and the likelihood of innocent errors and omissions. But, for a variety of reasons, this is emphatically not the case with Soviet statistics. First, the Kremlin has a monopoly of publication within the Soviet Union and has compelling strategic, political, and ideological interests in the image of the Soviet economy that it presents both abroad and at home. Therefore we should not be surprised if it publishes statistics that are partial, selective, often deliberately ambiguous, perhaps falsified (in the strict sense of the word), and as likely as not misleading. (Of course the extent to which Soviet statistics are misleading depends on the sophistication of the reader.) Thus, the question of the intent (and, if one wishes, also of the moral responsibility) of the Soviet leaders enters into an appraisal of Soviet statistics. What are they trying to prove? How are they trying to mislead the world? What follows from this about the usability of a specific statistical datum? Questions such as these, dealing with the distortion of statistics at the time of publication, are discussed in Chapter 7.

But this is not all that affects, in a systematic and perhaps predictable way, the reliability of Soviet statistics. The second important consideration is that the Soviet economy is a "command economy"[3]—a fact that is no less significant for our purpose than

[3] As used here, the concept of "command economy" is akin to certain concepts to be found in the recent German literature on economic systems; such as *direkte Befehlswirtschaft* ("direct command economy"; see Adolf Weber, *Marktwirtschaft und Sowjetwirtschaft*, Munich, 1949, Part II), *zentralgeleitete Wirtschaft* ("centrally directed economy"; see Walter Eucken, *Die Grundlagen der Nationalökonomie*, 6th ed., Stuttgart, 1950; 5th ed. translated as *The Foundations of Economics*, London, 1950, see esp. pp. 119ff.), and *Zentralverwaltungswirtschaft* (K. Paul Hensel, *Einführung in die Theorie der Zentralverwaltungswirtschaft*, Stuttgart, 1954, *passim*). It is also similar to the

that it is a planned economy. In contrast to a market economy, a command economy allocates resources and attempts to attain balance (in the sense that the inputs required for the production program will themselves be produced or otherwise forthcoming) and perhaps a measure of allocative efficiency, not primarily through the market mechanism but largely by direct production orders (commands) from the central authorities to the enterprises. The commands for production are generally based on central planning of some sort and are often supplemented by allocation (rationing) orders for the more important or more scarce factors and commodities, as well as by financial controls.

The nature and role of information in a command economy are, therefore, quite different from what they are in a market economy. The difference pervades the whole economic fabric, and even reaches deeply into individual firms to affect their internal reporting and accounting.[4] In the case of a market economy, the information required for its operation consists primarily of offers, frequently not addressed to anyone in particular, to engage in certain transactions at certain prices. Output reports by enterprises are not necessary; if they are submitted at all to statistical agencies or government bureaus, it is not to ensure balanced (not to say efficient) production within the economy, but to supply information either "in general," or for fiscal purposes, or for the operation of certain controls or the pursuit of policies of economic stability—all of which are not essential to the market mechanism as a form of economy-wide organization, albeit perhaps quite necessary for the long-run survival of the particular economic system, or for other good reasons.

In a command economy, on the other hand, the centripetal flow of production (and other) information is absolutely essential for the functioning of the system, that is, for the issuance of production

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concept of "hierarchy" as a "process of organization," when the latter is viewed on an economy-wide scale (see R. A. Dahl and C. E. Lindblom, *Politics, Economics, and Welfare*, New York, 1953, pp. 227ff.). The earliest use of the term "command economy" in the English literature occurs to my knowledge in George N. Halm, *Economic Systems*, New York, 1951, pp. 310ff., where acknowledgment to Weber, *op.cit.*, is made.

[4] In this connection, see the illuminating article by R. W. Campbell, "Accounting for Cost Control in the Soviet Economy," *The Review of Economics and Statistics*, February 1958, pp. 59-67, which shows that Soviet cost accounting is geared primarily to supply information for control by superior authorities over management, rather than for control by management over costs. Price formation is similarly affected; see my article "Industrial Prices in the USSR," *American Economic Review*, May 1959, pp. 50-64.

and allocation orders, and (what is sometimes overlooked) for the appraisal of the performance of subordinates by the central authorities. The compilation of statistical abstracts is only a by-product of these functions. Moreover, just as the production commands must be, as the Russians say, "addressed" to particular economic agents in order to pinpoint the responsibility and accountability for their execution, so the reports flowing in the opposite direction cannot be anonymous.

The analogy between the Soviet economy and a military organization that is frequently drawn by outside observers, and which is underscored by the vocabulary of Soviet economic administration, can be extended to the intrasystem communication: subordinates submit periodic reports on the progress of the "campaign"; on the basis of these reports, the central command issues orders *and* promotes or disciplines subordinates; and in turn, completing the circle, the subordinates report on their execution of the orders. The principle of authority-and-subordination, with all it implies for information and communication, pervades the Soviet economic system from top to bottom. But authority breeds deception, and commands elicit simulation. These problems have, as we shall see, a profound bearing on the reliability of Soviet statistics.

The third characteristic of the Soviet economy that impinges on statistical reporting is the chronic sellers' market. Its relevance is twofold: it affects the quality and specification of the goods whose output is being reported, and it removes or weakens certain checks on the inaccuracy of reporting. These problems will be taken up at various points in the present essay.

Although in the following chapters I discuss a number of serious difficulties and grave problems that arise from the nature of the Soviet economic system, it is not my purpose to pass over-all judgment on the Soviet economy as compared with the American economy, on command economies in general as compared or contrasted with market economies, or on sellers' markets as against buyers' or "neutral" markets. But I do want to stress that one must not exaggerate the specifically Russian or communist elements in these problems. Rather, given the way human beings react in the face of authority and in their quest for material well-being, the problems discussed here arise by and large from the logic of a command economy and a sellers' market. To be sure, many of the details, aspects, and nuances are peculiar to the Soviet scene, and some perhaps even to the Russian "national character," if there be such

a thing. But the broader outlines of these problems can be easily recognized in other authoritarian organizations, especially in other command economies, and in sellers' markets in other countries and at other times. That the *Befehlswirtschaft* of the Nazis evinced many traits in common with those of the Soviet economy is by now well known. But some of these traits may manifest themselves even in what we would generally regard as a nontotalitarian environment, being brought out by the economic "logic of things." Thus, the British Ministry of Aircraft Production during the last war—a sort of command economy operating in a sellers' market—struggled with many operating problems, including that of obtaining reliable statistical information, strikingly similar to those that we often regard as characteristically Soviet.[5] And even such an "outlandish" Soviet practice as the classification of perfectly good products as "spoilage" by the producing enterprises themselves (see p. 82) had its counterpart in the early postwar years in Japan, where manufacturers receiving allotments of rationed materials for the ostensible purpose of production for export would declare the products "spoiled" in order to be able to dispose of them domestically at higher yen prices.[6]

I have already said enough to suggest that the approach in this study of the reliability of certain Soviet statistics is mainly one of economic-systemic analysis: namely, an analysis of the obstacles to an accurate and unbiased flow of information, given the structure of plans, orders, incentives, and sanctions that prevail in the Soviet command economy, and also given the sellers' market that is such an important feature of it. In doing so, I have the benefit of the considerable research on the operating principles and characteristics of the Soviet economy that has been accomplished in the United States and other Western countries since the war. Particularly heavy is my intellectual debt to Professor Joseph S. Berliner, whose careful research of considerable insight on the behavior of Soviet industrial managers has been of great value for this study.[7] In addition to research by Western scholars, the evidence employed in this study consists primarily of the public concern of Soviet statistical and political authorities over the reliability of the statistical data at

[5] See E. Devons, *Planning in Practice: Essays in Aircraft Planning in Wartime*, Cambridge, 1950, especially Chapter VII.

[6] I am indebted to Professor Leon Hollerman of Claremont Men's College for bringing this point to my attention.

[7] See especially his *Factory and Manager in the USSR*, Cambridge, Mass., 1957.

their disposal; reports in the Soviet literature of specific instances of data distortion and of related problems; and eyewitness accounts of former residents of the USSR, particularly as collected and analyzed by Berliner. The description of the statistical apparatus and system rests largely on Soviet textbooks and similar material.

The nature of the evidence, coupled with the understandable reluctance of Soviet authorities to share with the world at large such estimates as they may have of the exact extent of the inaccuracies in published Soviet statistics, means that our conclusions are of necessity qualitative rather than quantitative. It is hoped that they are no less valid or significant for this reason.

Moreover, the evidence is extremely fragmentary, and it might be felt that generalizations about Soviet industry as a whole and about the entire Plan era are difficult to make. However, it seems to me that a certain amount of cautious generalization is not unwarranted because the relevant institutional and organizational conditions are quite uniform in all branches of Soviet industry at any one time, and remained remarkably stable from the early thirties until at least the reform of industrial administration in 1957. The changes since 1957, as they affect the present study, should also not be overestimated. (At any rate, since the National Bureau is carrying its Study of Soviet Economic Growth only through 1955, relatively little attention is paid here to the effects of the 1957 reform.)

Lastly, this study consciously eschews any international comparisons of the quality of industrial production statistics. Thus, while this study necessarily focuses on certain shortcomings of the Soviet statistical system, and a few obiter dicta by way of international comparison may even be offered on the pages to follow, no judgment is passed here on the over-all quality of Soviet statistics of physical output of industrial commodities (not to say statistics in general) in relation to those of other countries. Such a comparative analysis would require a much more formidable inquiry than has been attempted here.

Terminology

The usability of any statistical datum for a given purpose depends on its *reliability* and its *precision*. Precision is both quantitative and descriptive. Quantitative precision is determined by the number of significant digits in the figure. Descriptive precision, or definitiveness, varies directly with the completeness of the revealed definition of the statistical category that the figure purports to measure. As

definitiveness decreases, ambiguity increases. It may be worth noting that beyond a certain point additional precision, whether quantitative or descriptive, may be of little value. Not only may it be spurious, but by imparting an unwarranted appearance of accuracy it may actually be a disservice to the user of the statistics.[8]

The reliability of a datum is essentially a matter of its accuracy. By accuracy I mean the degree to which the datum corresponds, within its own context, to the actual event or situation that it purports to represent. (It is, so to say, the truthfulness of the datum, using this term now apart from any moral connotations.) Inaccuracy results from the distortion of data, which in turn may be due to error, omission, or falsification. The last, of course, may go as far as sheer invention, "pulling out of thin air." As I use the terms in the present study, error and omission are unintentional (though not necessarily random or unbiased), whereas falsification is an intentional act, for whatever motive, by someone interposed between the actual event or situation and the user of the data.

I shall distinguish between two kinds of distortion. The first is *numerical distortion*, where the resulting inaccuracy is in the figure itself. The second kind of distortion refers not, or not only, to the figure itself, but to the description of the statistical category in question. I therefore call it *descriptive distortion*, under which I subsume *contextual distortion*, that is to say, distortion arising because although the datum may not be inaccurately described, it nonetheless is placed in a context that tends to mislead the reader as to its exact meaning. Of course, both numerical and descriptive distortion may be deliberate, in which case the term "falsification" applies. While the distinction between the two kinds of distortion, numerical and descriptive, should not be overstressed, it has some usefulness, at least in discussion of the process whereby the datum is distorted. Moreover, while numerically the distinction between accuracy and precision is quite clear, descriptively the distinction between distortion and ambiguity is not a sharp one; certainly a

[8] Some problems and perils of undue precision are discussed in the pioneering work of Oskar Morgenstern, *On the Accuracy of Economic Observation*, Princeton, 1950, p. 25 and elsewhere. Quantitatively, the published Soviet statistics are often precise enough for most of our purposes, being expressed in two, three, and sometimes more significant digits. Only one consideration might be added: arithmetic manipulation of the figures, such as concatenation of the ubiquitous percentages, should take into account the possible extent of their rounding, and the result should be expressed, where practicable, as a range rather than as a single figure.

lack of due definitional precision may give rise to descriptive distortion.

The quantitative effect of distortion may be in either direction; that is, it may either exaggerate or understate the actual event or situation. When the distortion is numerical and deliberate (i.e. a falsification), I shall use the terms *write-up* and *write-down*.[9]

Since I am concerned here only with the individual datum, and not with a collection of statistical data, selection with the purpose of misleading may be disregarded as a form of distortion.

Finally, by *bias* I mean a persistent and significant inaccuracy in one direction. (No moral connotation is implied.)

As might be expected in a rigidly planned and extremely centralized economy, Soviet statistical terminology is at any one time highly standardized, and it will be convenient to abide by it insofar as practicable.

Industry. By Soviet definition, the term "industry" (*promyshlennost'*) comprises the activities of mining, manufacturing (including the production of electricity and gas), fishing, logging, and "work of an industrial nature" (such as repairs).[10] There are several standard breakdowns of this aggregate. For instance, in the breakdown by ownership, Soviet sources distinguish between socialist (state and *kolkhoz*-cooperative) and, for the earlier period, private industry. Until the middle of 1957 state industry was further divided administratively into that under the jurisdiction of industrial or of nonindustrial ministries, and, by level of significance, into industry under union, republic, or local subordination; since the middle of 1957 state-owned industrial enterprises have been subordinated either to the regional "councils of economy" (*sovnarkhozy*) or to local government agencies ("local soviets"). Another classification of industry is by branches (power generation, machine-building, etc.) and subbranches.[11] A specific Soviet breakdown is into Groups "A" and "B," i.e. branches of industry producing means of production and articles of "people's consumption," respectively—a classification that roughly parallels Marx's division of the whole economy into Departments I and II. Lastly, there is the important breakdown into large- and small-scale industry according to the size of the

[9] The standard Soviet word for "write-up" (noun) is *pripiska*, its near-literal equivalent. There seems to be no standard Soviet term for "write-down."

[10] Prerevolutionary statistics omit the last three categories from "industry."

[11] For example, see A. I. Ezhov, *Statistika promyshlennosti* [Statistics of Industry], Moscow, 1957, pp. 43-50.

enterprise (see section on small-scale industry censuses in Chapter 3).

Basic (*osnovnye*) enterprises are those which possess financial and administrative integrity, i.e. which have their own balance sheets. Those that do not meet this test are known as *subsidiary* (*podsobnye*) enterprises. Subsidiary industrial enterprises are frequently attached to basic nonindustrial ones, e.g. the repair shops of railroads, or the mills of collective farms.

Uchet. The important Russian term *uchet* is incapable of exact English translation, and has therefore been frequently rendered by such related notions as "accounting" and "statistics." The closest equivalents are perhaps "recording," "record-keeping," and "keeping account of (something)"; I shall use these expressions alternatively, depending on the context.

As to the content of this record-keeping, Soviet sources distinguish three major types of *uchet* on the enterprise level:

1. The first comprises the keeping of both engineering records (*tekhnicheskii uchet*), usually in physical units, e.g. temperature, pressure, weight, etc., and records of operations (*operativnyi uchet*), which cover all day-to-day activities of an enterprise. These overlap to a considerable extent and are therefore designated jointly as *operativno-tekhnicheskii uchet.* Its purpose is to aid managerial decisions at the enterprise and higher levels.

2. The second major category, *bukhgalterskii uchet,* deals primarily with value magnitudes and corresponds closely to what is known as accounting in the United States. (However, as befits a command economy in contrast to a market economy, there is no independent public accounting or auditing in the USSR as we know them in the United States. These functions are performed for the enterprise by superior administrative entities and various agencies of state control.)

3. Third, the sources speak of the keeping of statistical records (*statisticheskii uchet*), which bring together the accounting data and operational records, as well as some other information. These records are set up in such a way as to be able to gauge the extent of plan fulfillment, and they constitute the basic source of data for Soviet economic statistics.[12]

[12] On these categories of *uchet,* see Ia. S. Bebchuk, *Uchet, kal'kuliatsiia i tekhnicheskaia otchetnost' mashinostroitel'nogo predpriiatiia* [Record-Keeping, Calculation, and Engineering Reporting in the Machine-Building Enterprise], 2nd ed., Moscow, 1954, pp. 6-7; and V. Makarov and M. Belousov, *Teoriia bukhgalterskogo ucheta* [Theory of Accounting], Moscow, 1955, pp. 18-23.

As to the organizational level on which records are kept, the Soviet literature distinguishes among:

1. Primary record-keeping (*pervichnyi uchet*) at the earliest point at which data are generated (tally sheet, voucher, etc.).

2. Low-level record-keeping (*nizovoi uchet*), which covers all such activities on the enterprise level.

3. Economy-wide record-keeping (*narodnokhoziaistvennyi uchet*), which is that part of record-keeping and statistical work which culminates in a set of economy-wide statistics.

Reporting. Another important Russian term is *otchetnost'*, which can be translated as "reporting," or sometimes as "accountability." It has the specific connotation of rendering account to a superior, and generally denotes an upward flow. Soviet sources distinguish between reports of operations (*operativnaia otchetnost'*) of a day-to-day kind, the submission of accounting reports (*bukhgalterskaia otchetnost'*), and statistical reporting (*statisticheskaia otchetnost'*), the last dealing chiefly with plan fulfillment. As to the direction and purpose of the flow of reports, distinction is made between centralized reporting (*obshchegosudarstvennaia otchetnost'*) and departmental reporting (*vedomstvennaia otchetnost'*); the latter flows upward only directly within the same administrative hierarchy, while the former is also submitted to outside entities (such as the statistical authorities) for incorporation into regional or all-union statistics.

Statistics. By statistics I shall mean numerical data in organized and processed form. (In a few places, however, as will be evident from the context, I shall use the word in its other sense—that of a scientific discipline.) By *statistical apparatus* I shall mean the administrative and institutional structure whose primary purpose is the collection, processing, and compilation of statistics. The statistical apparatus, together with the ways in which it functions, will be referred to as the *statistical system.*

PART ONE

THE SOVIET STATISTICAL SYSTEM

CHAPTER 1

Brief History of the Statistical Apparatus[1]

As MIGHT be inferred from the nature of the regime and its immediate problems, measures for the centralization and development of statistical work were taken very soon after the revolution, building on the substantial statistical tradition and personnel inherited from the past. Lenin himself had the highest regard for *uchet*. The Central Statistical Administration (*Tsentral'noe statisticheskoe upravlenie*, abbreviated as *TsSU*) was established early in 1918, and on July 25 of that year the Council of People's Commissars published a "Decree on State Statistics of the RSFSR," which charged *TsSU* with general guidance and control over the statistical work of various departments and local governments, as well as with collecting and compiling statistics on its own. *TsSU* received the status of a People's Commissariat, and its administrator became a member of the Council of People's Commissars (*Sovet narodnykh komissarov*, abbreviated as *SNK*), at first in a consultative capacity only, but from 1926 on as a full-fledged voting member.

After the publication of the July 1918 decree, *TsSU* took over *in toto* the Division of Census and Statistics of the Supreme Council of the Economy (*Vysshii sovet narodnogo khoziaistva*, abbreviated as *VSNKh*), which at that time was preparing a census of industry. This task was carried out in 1918, but due to the difficulties of the period, coverage was restricted to large-scale industry only, thereby, incidentally, reviving a prerevolutionary statistical category that was to play an important role in subsequent years.

TsSU was destined for a turbulent history. On the one hand, thanks to the intimate but complex connection between statistics and

[1] This chapter is based primarily on the following sources: *Bol'shaia sovetskaia entsiklopediia* [The Great Soviet Encyclopedia], 1st ed., Moscow, 1926-1947, vol. 60, pp. 771ff.; A. I. Ezhov, *Promyshlennaia statistika* [Industrial Statistics], Moscow, 1954, pp. 370ff.; M. Stashelevskii, "Organization and Activities of the Soviet Statistical Services" (unpublished manuscript for the Research Program on the USSR, n.d.); A. I. Gozulov, *Ekonomicheskaia statistika* [Economic Statistics], Moscow, 1953, pp. 29ff.; D. B. Savinskii, *Kurs promyshlennoi statistiki* [A Course in Industrial Statistics], 4th ed., Moscow, 1954, pp. 10ff.; R. Kh. L'vova, "Razvitie metodologii ischisleniia ob'emnykh pokazatelei promyshlennoi produktsii SSSR" [Development of the Methodology of Calculating Indicators of the Volume of Industrial Output in the USSR] in *Ocherki po istorii statistiki SSSR* [Essays on the History of Statistics in the USSR], Moscow, 1955, pp. 220-240; and A. I. Gozulov, *Istoriia otechestvennoi statistiki* [History of Statistics in Our Land], Moscow, 1957.

planning (on which more below), its status in relation to the State Planning Commission (*Gosplan*) changed several times, varying from complete independence to organic integration. On the other hand, its function as the main fact-gathering agency of the state, as well as one of the government's arms of control over the economy, made it extremely sensitive to internal political winds. In its early days, *TsSU* was also under criticism because of the alleged "bourgeois" background of its professional staff.

Politically, the most difficult times for *TsSU* and its successors were the middle twenties, when its grain statistics placed it in the midst of the intraparty factional strife over agriculture; the early thirties, during the sweeping purge of planning and statistical personnel in the country; 1934, when its livestock statistics following the collectivization of agriculture were questioned; and 1937, after the ill-fated population census of that year. These periods were marked by public criticism and purges of the personnel. Whether similar crises occurred in later years is not known, for they may have been effectively veiled by mounting secrecy from public view. It is quite possible that the separation of *TsSU* from the *Gosplan* in the summer of 1948, which coincided with or shortly preceded a putative shift in the Kremlin's internal power balance, was also associated with heightened political pressure and a turnover in personnel. (On this event more will be said below.) It is worth noting for present purposes that none of the above-mentioned crises in the history of *TsSU* seems to have been directly linked to its work in industrial statistics, which is perhaps not surprising, since such statistics are primarily processed by *TsSU*, and not originated by it to the same degree as are agricultural and demographic statistics.

Until 1926, *TsSU* concentrated its efforts with regard to industry on periodic censuses (taken in 1918, 1920, 1923, and 1925) and their processing, rather than on continuous current statistics. The latter were handled primarily by *VSNKh*, which was in administrative charge of the more important branches of industry, while *TsSU* collected current data only on the number of workers, value of output, and the physical output of a small number of commodities. In the reorganization of 1926/27 the two separate divisions of *TsSU* dealing with industrial statistics (census and current reporting) were merged into a single Division of Industrial Statistics, and emphasis was shifted to current data. However, not until 1930 was a uniform system of yearly reporting on the basis of a standard form introduced in industry, and even then for large-scale establishments

only. Small-scale industry was not—and has not been since, except for unsuccessful attempts with questionnaires in 1931 and 1932—covered by periodic reporting, but has been subject to surveys and censuses instead.[2]

The growing importance of planning in the later twenties tended to put pressure on statistical work from that direction. In 1927, a Planning Committee (*Planovaia komissiia*, abbreviated as *Statplan*)[3] was established within *TsSU* to plan statistical work and to coordinate it with the activities of the *Gosplan*. However, difficulties of coordinating statistics with planning continued, resulting in January 1930 in the abolition of *TsSU* and its absorption by the *Gosplan* as a separate "sector." A subsequent resolution of *SNK*, dated May 9, 1931 and entitled "On the Organization of Work in Record-Keeping and Statistics,"[4] contained the following major points: (1) central "guidance" and supervision of all work in record-keeping and statistics is to rest with the *Gosplan*; (2) such work is to be reorganized to meet the needs of planning and of the reforms in management being introduced; (3) the *Gosplan* is to concentrate on summarizing data, the basic work of data-gathering being concentrated in the statistical divisions of the various departments.

The years 1930 and 1931 witnessed purges of personnel and the merger of statistical and planning staffs on all levels. However, the integration of the two services was soon deemed to have gone too far, and by virtue of a resolution of *SNK*, dated December 17, 1931, the Sector of Economic Record-Keeping was raised to the status of "Central Administration of Economic Record-Keeping Attached to the *Gosplan* of the USSR" (*Tsentral'noe upravlenie narodnokhoziaistvennogo ucheta pri Gosplane SSSR*, abbreviated as *TsUNKhU*).[5]

[2] Such censuses were taken in 1925, 1929/30, biannually from 1934 to 1938 (covering the preceding year), annually from 1939 to 1954 (with the exception of 1948), and were intended to be taken twice every five years after 1954. See Ezhov, 1954, *op.cit.*, pp. 377f.

[3] Note that the Russian word *komissiia* roughly corresponds in usage to the English word "committee," and *komitet* to "commission."

[4] *Izvestia*, May 10, 1931; also *B.F.Kh.Z.*, 1931, No. 15, p. 70.

[5] *Izvestia*, Dec. 19, 1931; also *B.F.Kh.Z.*, 1931, No. 36, pp. 1f. The structure, aims, and functions of *TsUNKhU* and lower statistical agencies were defined by two subsequent resolutions of *SNK*, both dated March 10, 1932 (*B.F.Kh.Z.*, 1932, No. 21, pp. 1-5).

The change in the title from "statistics" to "economic record-keeping" (*narodnokhoziaistvennyi uchet*) was in line with the then prevailing dogma that statistics, being the study of unorganized and atomistic mass phenomena, was not applicable to a planned socialist economy, and was therefore supplanted by mere record-keeping, i.e. *uchet*. Cf. J. Miller, "A Political Economy

The aims and functions were to remain substantially the same as in the resolution of May 9, 1931, but now a unified hierarchial structure of statistical offices was established for the first time. *TsUNKhU* itself formed the apex of the pyramid. "Administrations of economic record-keeping" (*upravleniia narodnokhoziaistvennogo ucheta*) were set up at the republic, *krai*, and *oblast'* levels, attached to the respective planning offices. At the district (*raion*) level, where no separate planning offices existed, "inspectorates of economic record-keeping" were established and attached to the local soviets. Control over the whole system was centralized in *TsUNKhU*.

The first major census of industry undertaken by the new organization was that of small-scale industry for 1933. However, its chief difficulties soon proved to lie elsewhere: in labor statistics and the census of livestock. The former suffered from the labor fluidity of those years, as well as from inadequate statistical procedure, while the census of privately owned livestock, which had to be conducted annually on January 1 beginning with 1933,[6] at once was a matter of great political significance, and was met with concealment of animals by the peasants because of the taxation of livestock.

It was this census in particular, and the poor state of rural statistics in general, that prompted the establishment of a still lower stratum in the hierarchy of statistical agencies, that of the subdistrict inspectors (*uchastkovye inspektory*) in the middle of 1934. These functionaries were also intended to duplicate the collection of data in those respects (such as wages and employment, and prices) where the information transmitted by the departments was considered to be unreliable.[7]

By 1938, there were nearly 10,000 subdistrict inspectors, nearly 7,000 district inspectors, and over one thousand persons in city statistical administrations and inspectorates,[8] not to mention the personnel in higher echelons.

The two major undertakings of *TsUNKhU* in the later thirties were the population censuses of January 1937 and January 1939. As

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of Socialism in the Making," *Soviet Studies*, April 1953, p. 408. *TsUNKhU* is frequently translated as "Central Administration of National Economic Accounting," but the word "national" is redundant in English (though not in Russian), and "accounting" is inexact. The phrase "attached to" signified a certain amount of autonomy and a distinct country-wide organization.

[6] *B.F.Kh.Z.*, 1932, No. 27-28, pp. 30f.

[7] *Plan*, 1934, No. 7, p. 36.

[8] *P.Kh.*, 1938, No. 4, p. 179.

is now well known, the results of the former were suppressed, presumably because its findings on the size and composition of the population severely disappointed the regime's expectations. A sweeping purge of the personnel of *TsUNKhU*, as well as of the rest of the *Gosplan*, began soon after, and was apparently related to the census. Among those purged were the head of *TsUNKhU* (Kraval'), the chief of the population division (Kvitkin), and the chief of the census division (Kurman).[9]

One of the charges against the alleged "wreckers" was that they had made the structure of *TsUNKhU* overly complex and had laid it out along "narrowly functional" lines. Accordingly, a reorganization was carried out in 1938.[10] Substantively, the major defects "brought about by the wreckers" were said to be inordinate inflation of the volume of reporting (as we shall see, a chronic ailment), bad organization of primary record-keeping in enterprises, and, most significantly, incomplete coordination between statistics and planning.[11] It must have been primarily the last point that prompted the next change in the status of *TsUNKhU*—from affiliation with the *Gosplan* to complete absorption by it (February 1939). The title was correspondingly amended from ". . . attached to the *Gosplan*" to "... of the *Gosplan*," but the separate hierarchy of statistical agencies under *TsUNKhU* was apparently retained intact.

In 1941, the name reverted to "Central Statistical Administration" (*TsSU*), although the position of the statistical apparatus within the *Gosplan* apparently was not immediately affected thereby. The return to the title of the twenties was probably connected with the revision

[9] B. Martschenko, "Soviet Population Trends, 1926-1939" (mimeographed in Russian), Research Program on the USSR, 1953, p. 26. Other discussions of the two censuses by informed émigré writers may be found in P. Galin, *Kak proizvodilis' perepisi naseleniia v SSSR* [How Population Censuses Were Conducted in the USSR], Munich, 1953; and in Stashelevskii, *op.cit.* Examination of *Plan*, the house organ of the *Gosplan* at the time, suggests that the purge in that organization began in March 1937. In listing the population censuses since the revolution, a postwar Soviet source even fails to mention the 1937 census (Gozulov, 1953, *op.cit.*, p. 31), although more recent sources have mentioned it.

Martschenko (*op.cit.*, p. 6) reports that in 1933 the (local?) divisions of population statistics in the Ukraine were placed under the control of the *NKVD* and operated secretly from the rest of the statistical apparatus, although remaining fiscally and physically part of it. Presumably the same change took place in all of the USSR at the time. It is known that in 1938 *TsUNKhU* contained a "secret department" (*sekretnaia chast'*); see the source reference in next footnote.

[10] Its results can be seen in *P.Kh.*, 1938, No. 8, p. 148.

[11] See *P.Kh.*, 1938, No. 8, pp. 10-19, and 1940, No. 1, pp. 19-24.

of the theory of socialist economics under way at the time.[12] By now the nature of the "economic laws" operating in a socialist society was apparently deemed such as to not only permit but even require the use of the term "statistics" rather than "record-keeping"—a doctrinal position that survives to the present.

Organizationally, the next significant reform came toward the end of 1943, when the statistical agencies on the *oblast'*, *krai*, and republic levels were merged with the corresponding planning offices, thus carrying further the closer integration between planning and statistical authorities begun in the late thirties.[13] The merger on the intermediate levels seems to have lasted until August 1948, that is, until the removal of *TsSU* from the *Gosplan* and its attachment, as a separate entity, to the USSR Council of Ministers.[14]

Unlike similar reorganizations in the thirties, the removal of *TsSU* from the *Gosplan* in 1948 was little publicized and even less explained. The earliest explanation I have seen appeared in a footnote in a pamphlet published only in 1955,[15] and even the fullest explanation that I have come across is brief and cryptic. It may be worth reproducing it in full:[16]

[12] This process (at least on the surface) reached a high point with the publication of the well-known article on "Some Questions on the Teaching of Political Economy" (*Pod znamenem marksizma*, 1943, No. 7-8; English translation in *American Economic Review*, September 1944, pp. 501-530, with comments in subsequent issues. Further comments in Miller, *op.cit.*, pp. 416ff.). As early as 1936 the eminent economist and statistician Strumilin was maintaining that statistics as a science *was* applicable to the conditions of the Soviet economy (S. G. Strumilin, *K perestroike sovetskogo ucheta* [Toward a Reform of Soviet Record-Keeping], 4th ed., Moscow, 1936).

[13] *Slovar'-spravochnik po sotsial'no-ekonomicheskoi statistike* [Dictionary and Manual on Social and Economic Statistics], Moscow, 1944, p. 4.

[14] Cf. *Slovar'-spravochnik po sotsial'no-ekonomicheskoi statistike* [Dictionary and Manual on Social and Economic Statistics], Moscow, 1948, p. 22, which was published a few months earlier. The separation of *TsSU* from the *Gosplan* was decreed by a resolution of the USSR Council of Ministers, dated Aug. 10, 1948, No. 3018 (G. V. Teplov, *Planirovanie na mashinostroitel'nykh zavodakh* [Planning in Machine-Building Plants], Moscow, 1949, p. 37).

[15] S. K. Tatur, *Organizatsiia narodnokhoziaistvennogo ucheta v sotsialisticheskom obshchestve* [The Organization of Economic Record-Keeping in a Socialist Society], Moscow, 1955, pp. 16f.

[16] A. I. Ezhov, "Sovetskaia statistika za 40 let" [Soviet Statistics Over 40 Years], *V.E.*, 1957, No. 11, pp. 73f.; translation and italics mine. The reference to statistics of supply and "new technology" (*novaia tekhnika*—perhaps better translated as "new, or newly introduced, equipment") undoubtedly is related to the establishment less than a year earlier of two new high-level governmental bodies, the State Commission for the Supply of the Economy at the USSR Council of Ministers (*Gossnab SSSR*) and the State Commission for the Introduction of New Technology in the Economy at the USSR Council

"As the resolution of the government indicated, the basic reason for this [1948] reorganization of *TsSU* was that the organization of statistics for the use of the state did not meet the requirements of the administration and planning of the economy by the state, and also suffered from other substantial defects. The statistics of supply and of technical-economic norms were unsatisfactorily organized; statistics of new technology and of natural resources were entirely lacking; there were defects in the direction of the statistical work of ministries and departments on the part of *TsSU*; *the checking of departmental statistics for reliability was not adequately organized*; and the mechanization of statistical work as well as the employment of up-to-date tabulating machinery were faltering. A considerable portion of the statistical material that was being collected by the statistical agencies and by the departments was not being properly processed or analyzed, and therefore could not be utilized by the government. These defects had to be eliminated and statistical work had to be greatly improved."

It is not clear how the separation of *TsSU* from the *Gosplan* was to contribute to the elimination of the various defects and gaps listed, unless the planning authorities had been thwarting measures that might have enhanced the reliability of the materials and the efficiency of operation of the statistical apparatus—a situation that is not inconceivable.

However, certain contemporaneous events invite further speculation. The action on *TsSU* followed by a few weeks the apparent shift in power within the Kremlin from the "Zhdanovites" to Malenkov.[17] Zhdanov's death followed in a couple of months. Voznesenskii, until then the chairman of the *Gosplan* and reputedly a "Zhdanovite," disappeared shortly thereafter, to be replaced in this post by Saburov, reputedly an associate of Malenkov. Were the *Gosplan* and *TsSU* factors, or pawns, in the power shift within the Kremlin?[18]

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of Ministers (*Gostekhnika SSSR*). (Resolution of the Party Central Committee; partial text in *Direktivy KPSS i Sovetskogo pravitel'stva po khoziaistvennym voprosam* [Directives of the Communist Party of the Soviet Union and of the Soviet Government on Economic Subjects], Moscow, Vol. III, 1958, p. 261.)

[17] On the probable timing of the power shift, see Boris Nicolaevsky in *Sotsialisticheskii vestnik* [The Socialist Courier], New York, November 1955, p. 211.

[18] It may be noted in this connection that 1948 was the only year between 1939 and 1954 when *TsSU* failed to conduct a census of small-scale industry,

The reorganization of industrial administration in the middle of 1957 does not seem to have affected the organizational structure of *TsSU* much, although it did substantially affect its work.

To recapitulate, at present the structure of the Soviet statistical apparatus is somewhat as follows.[19] The Central Statistical Administration (attached to the USSR Council of Ministers) is the "directing agency for all state statistics." Subordinated to it are the statistical administrations of the union republics. Immediately below these are the statistical administrations of the autonomous republics, territories (*krai*), *oblasti*, the cities of Moscow and Leningrad, and the capital cities of the other union republics. Below these are the district (*raion*) and city inspectorates of *TsSU SSSR*.[20] The whole structure is said to be "strictly centralized," the regional and local agencies being "independent of local [government] organizations and accountable only to *TsSU SSSR*. This assures the necessary objectivity and accuracy of statistical data."[21]

At the time that *TsSU* was separated from the *Gosplan*, the government issued a statute (*polozhenie*) defining its assignment. The text of the statute is not available, but a recent source lists the tasks of *TsSU* as follows:[22]

1. Improvement and perfection of record-keeping and of statistics.
2. Development and perfection of methods of record-keeping and statistics on the basis of Marxist-Leninist science.
3. Systematic recording of the fulfillment of state economic plans.
4. Keeping systematic records of material resources, electric power, raw and semifinished materials in production and construction,

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though it is not clear whether the omitted census was that of 1948 for the operating year 1947, or that of 1949 for 1948. Cf. Ezhov, 1954, *op.cit.*, p. 378.

[19] Cf. A. I. Petrov, *Kurs ekonomicheskoi statistiki* [A Course in Economic Statistics], 2nd ed., Moscow, 1954, p. 13; B. I. Braginskii and N. S. Koval', *Organizatsiia planirovaniia narodnogo khoziaistva* SSSR [Organization of Economic Planning in the USSR], Moscow, 1954, pp. 105f.; article on *TsSU* in *Bol'shaia sovetskaia entsiklopediia*, 2nd ed.; and A. I. Ezhov, *Organizatsiia gosudarstvennoi statistiki v SSSR* [The Statistical System of the Soviet State], Moscow, 1957, p. 30.

[20] The subdistrict inspectors were apparently abolished some time after the war. They were still mentioned in *Posobie po statistike dlia raionnykh i uchastkovykh inspektorov TsSU Gosplana SSSR* [Manual on Statistics for District and Subdistrict Inspectors of *TsSU* of the USSR *Gosplan*], Moscow, 1945.

[21] Braginskii, *op.cit.*, p. 106.

[22] Petrov, *op.cit.*, p. 13. The 1957 reorganization of industrial administration has rendered some of the wording obsolete, but the general picture is no doubt still valid.

availability of above-norm inventories of fuel, raw and semi-finished materials.

5. Recording the fulfillment of the state plan for the articulated [*kompleksnoe*] supply for the most important objects under construction and about to be commissioned [*puskovye*].
6. Taking of censuses.
7. Compilation of the balance of the economy.
8. Procurement and processing of data of the budgets of workers, employees, and collective farmers.
9. Collection and processing of statistical data on the people's democracies.
10. Collection and processing of statistical data on capitalist countries.
11. Regular and timely supplying of statistical materials to the government of the USSR.
12. Regular and timely submission to the USSR *Gosplan*, and to the State Commission of the Council of Ministers of the USSR on Construction, of data from existing reporting, data derived from the analysis of annual reports and one-time censuses and surveys, as well as other statistical materials that are necessary for their work and are required for the compilation and supervision of state economic plans.
13. Direction and supervision of statistical work in ministries, other departments [*vedomstva*], institutions [*uchrezhdeniia*], and enterprises, and the checking of their reports for accuracy.
14. Reduction and rationalization of reporting, prevention of illicit reporting, etc.

After the reorganization of industry in 1957, the USSR Council of Ministers was to prepare and enact a new statute on the functions of *TsSU*, "which would reflect the fundamental changes in the organization of statistical work [brought about by the reorganization of industry—G.G.] and the questions relating to the expansion of the rights of local statistical agencies."[23] The new statute has not been published at this writing.

[23] Ezhov, in *V.E.*, p. 77.

CHAPTER 2

Some Characteristics of the Statistical System

NEARLY every Soviet work on statistics asserts the superiority of the Soviet statistical system over its "capitalist" counterparts. It is said that under capitalism comprehensive and truthful economic statistics are not to be expected because of the secretiveness of private firms, the lack of centralized coordination in and authority over the generation and collection of data, the class interests of the governments in power and the mendacity of their statisticians, etc. Soviet statistics, it is claimed on the other hand, have the decisive advantages of correct ideological and scientific foundations, administrative centralization and methodological unity, completeness of coverage, rapid reporting, the intellectual and scientific integrity of statisticians uncorrupted by special interests, and so forth.[1]

The relative merits of the two "types" of statistical system do not concern us at the moment. (Besides, for many purposes the more meaningful contrast is between statistics in a command economy and those in a market economy, rather than between "socialist" and "capitalist" statistics.) Instead, let us ask what are the specific features of the Soviet statistical system that are pertinent to the problem at hand, the collection and compilation of physical output data.

Ideological Foundations

Soviet statistics—using the term now in the sense of an intellectual discipline—has been rather turbulently affected throughout its history by ideological and philosophical cross currents, although its required allegiance to "Marxism-Leninism" has never been formally open to question, of course. The full story remains to be told in the West. A spirited discussion on the nature of statistics filled the journals between 1949 and the formulation of an official position in 1954. The developments since 1949 have been analyzed in an interesting article by Schattman, who sees an attempt to subordinate statistics

[1] Cf. L. M. Tsyrlin and A. I. Petrov, *Burzhuaznaia statistika skryvaet pravdu* [Bourgeois Statistics Conceal the Truth], Moscow, 1953, *passim*; D. B. Savinskii, *Kurs promyshlennoi statistiki* [A Course in Industrial Statistics], Moscow, 1954, pp. 24-28; and S. K. Tatur, *Organizatsiia narodnokhoziaistvennogo ucheta v sotsialisticheskom obshchestve* [The Organization of Economic Record-Keeping in a Socialist Society], Moscow, 1955, p. 10.

(as a science) to the ideological and propaganda needs of the regime, but finds a distinct relaxation since 1954 in this regard.[2]

The latest doctrinal position is summarized in the following excerpt from an article in the Encyclopedic Dictionary published in 1955:[3]

"Statistics is a distinct [*samostoiatel'naia*] social science which studies the quantitative aspects of mass social phenomena inseparably from their qualitative aspects. . . . The theoretical bases of statistics are historical materialism and Marxist-Leninist political economy. . . . With due regard for the nature and basic characteristics of the object of its study, statistics develops special techniques and methods of research (mass observation, frequency distributions, descriptive measures) which in their totality comprise statistical methodology. In some instances statistics may employ the methods of mathematical statistics, including the probability theory. . . . Statistics is a class and party-oriented [*partiinaia*] science. Its main purpose is *the processing, analysis, and timely submission to the agencies of state planning and administration of accurate and scientifically founded statistical data that show the course of fulfillment of state plans, the growth of socialist economy and culture, the supply of material resources in the economy and their utilization, the development of the various branches of the economy relative to each other, and the potentialities for the overfulfillment of the plan."*

That this definition is "loaded" politically and ideologically is clear. But it does not necessarily follow that the collection and compilation of physical output statistics—as distinct from their publication and propaganda use—are affected by the "slant." The tendencies toward distortion of physical output data that may be inherent in the sta-

[2] S. E. Schattman, "Dogma vs. Science in Soviet Statistics," *Problems of Communism*, January-February 1956, pp. 30-35. For an analysis of the discussion in its earlier stages, see Stuart A. Rice ("Statistical Conceptions in the Soviet Union," *The Review of Economics and Statistics*, February 1952, pp. 82-86, and "Statistics in the Soviet Union," *Bulletin of the Atomic Scientists*, June 1952, pp. 159-162), who also interpreted the developments as an encroachment of ideology and politics on the science of statistics. For an English translation of one of the recent authoritative statements, and a brief comment thereon by C. E. V. Leser, see *Soviet Studies*, January 1955, pp. 321-331.

[3] *Entsiklopedicheskii slovar'* [Encyclopedic Dictionary], Moscow, 1955, Vol. III, p. 320. Interestingly, the passage between the asterisks (inserted by me) is identical with a passage describing the task of the Central Statistical Administration in the same volume (p. 577). That is to say, statistics as a science is what the Central Statistical Administration does.

tistical system seem to be explainable without necessarily resorting to ideological factors in the strict sense.

Purposes of Soviet Statistics

While to some extent economic statistics may be collected and compiled in the Soviet Union for the "general use" of the leaders of the regime, or for employment in propaganda at home and abroad, or for the preservation and extension of bureaucratic "empires" within the statistical apparatus and other departments, they are primarily collected and compiled for a number of purposes related to the planning and administration of the economy. These purposes are:

1. Guidance of managerial decisions (*operativno-tekhnicheskoe rukovodstvo*) in the enterprise and at higher levels.
2. Checking on the course and extent of plan fulfillment.
3. Aid in future planning.
4. Aid in the allocation of equipment, materials, manpower, and other resources.
5. Dispensation of individual and group rewards and penalties.
6. Checking on compliance with various laws and regulations (e.g. inventory control, wage and price control, etc.).

It must be noted that, by and large, the same flow of statistical data serves several of these objectives at once; that some of the purposes are intimately connected with the fortunes of individuals and groups; and that frequently the interested individuals participate in the generation and reporting of the very statistical data on which their performance is judged. This is particularly true of statistics of output. But the same flow of data culminates in regional and national sets of compiled statistics, from which the data released to the world at large are presumably drawn. Thus, in a sense, the regional and national statistics of output are largely declared by parties who have a vested interest in them. Although its effect is limited by fear of the strict penalties imposed for false reporting, as well as by various institutional checks discussed below, this fact is perhaps the greatest defect in the Soviet statistical system, and perhaps the strongest reason to suspect the reliability of the published physical output data.

Statistics and Planning[4]

As we have seen, a major purpose of Soviet statistics is to report on the progress of plan fulfillment and the availability of resources, and

[4] The following Soviet sources, among others, refer directly (if not fully) to

to facilitate future planning. The other purposes—such as guidance of day-to-day operations or the dispensation of rewards and punishments to management—are also closely related to the execution of economic plans. Given the nature and scope of Soviet planning, statistics clearly should be not only accurate and timely, but at least as detailed as the plans themselves. (In fact, they are much more detailed than the plans.) Further, there should be methodological uniformity and consistency not only within the body of statistical data, but also between it and the corpus of planning categories and concepts. Operational statistics are the language of Soviet-type planning. "Without statistics there can be no planning."[5]

This would seem to argue for the closest organizational contact between statistical and planning authorities, if not for their complete integration. However, the picture is not as simple as that, for the statistical apparatus is an agency of supervision (*kontrol'*), in addition to being a source of information for planners—supervision not only of the activity of producers (enterprises, departments, etc.) but also of the efficiency of the planners—and, one should add, the economic commanders—themselves. Beyond this lies the danger that statisticians will dominate planning by virtue of their hold on information. Thus, a certain amount of organizational independence between statistics and planning is also desirable.

Here is how Devons, a percipient observer of planning, albeit under conditions of a relatively "mild" command economy in Britain during the last war, sees the dilemma:[6]

"Attempts were made to avoid this danger [of statisticians guiding policy by selecting or manipulating statistics—G.G.], by separating the collection and issue of statistics from decisions and discussions of policy. But such attempts invariably failed [in the Ministry of

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the relation between statistics and planning: *Bol'shaia sovetskaia entsiklopediia* [The Great Soviet Encyclopedia], 1st ed., Vol. 56, pp. 477ff.; B. I. Braginskii and N. S. Koval', *Organizatsiia planirovaniia narodnogo khoziaistva SSSR* [Organization of Economic Planning in the USSR], Moscow, 1954, p. 126; A. I. Petrov (ed.), *Kurs ekonomicheskoi statistiki* [A Course in Economic Statistics], 2nd ed., Moscow, 1954, p. 6; A. I. Gozulov, *Ekonomicheskaia statistika* [Economic Statistics], Moscow, 1953, pp. 26-29; S. A. Shchenkov, *Otchetnost' promyshlennykh predpriiatii* [Reporting by Industrial Enterprises], Moscow, 1952, p. 8; and L. M. Volodarskii, *Statistika promyshlennosti i voprosy planirovaniia* [Statistics of Industry and Planning], Moscow, 1958, *passim*.

[5] Ely Devons, *Planning in Practice: Essays in Aircraft Planning in Wartime*, Cambridge, 1950, p. 133.

[6] *Ibid.*, pp. 163ff.

Aircraft Production]. First, because the analysis of data about the past is so intimately concerned with the planning of the future, that any attempt to separate the two functions usually resulted either in the planners paying little attention to the past and so making the most unrealistic plans, or in the planners setting up their own fact-finding staff which by-passed the statistical division and so deprived it of any influence. Secondly, life in a statistics division which was separated from policy was apt to be dull, and there was great difficulty in attracting efficient staff to such a division. In any case, unless the staff of the statistics division were closely concerned with the policy decisions, they had no easy means of knowing which were the most significant statistics to collect and analyse; and they had the greatest difficulty in ensuring that some notice was taken of the results of their analyses. The danger that planners who have a monopoly of the statistics might distort the figures to prove their case cannot be avoided. Where planning is necessary, great power must inevitably fall into the hands of the statistician."

While these observations do not entirely apply to the Soviet scene (where, for one thing, the structure of information-gathering, planning, and command-issuing authorities and agencies is a much more complex one than in Devons' experience), the basic dilemma is fundamentally the same.

The history of the Soviet statistical apparatus, as sketched in the preceding chapter, fully reflects this dilemma. As we have seen, during the twenties the planning and statistical authorities were separate organizations. To improve methodological coordination between the *Gosplan* and *TsSU*, the latter was dissolved early in 1930, and its functions were completely absorbed by the former, so that the statistical agencies virtually lost all independent identity. This was the high-water mark of integration. Less than two years later, *TsUNKhU* was established as an autonomous administration within the framework of the *Gosplan*, and the newly created local statistical agencies were likewise affiliated with their respective local planning commissions. As planning became more comprehensive and detailed, complaints of the inadequacy and lack of methodological agreement with planning were directed to the statistical apparatus, culminating in a more complete absorption of *TsUNKhU* by the *Gosplan*. And finally, in August 1948, the statistical administration, now renamed *TsSU* again, was completely separated from its parent body under circumstances that at least suggest the desire, for internal political

reasons, to employ the fact-gathering apparatus as a counterpoise to the planning machinery.[7] At present, the local statistical agencies are administratively entirely subordinated to *TsSU*.

As already mentioned, inadequate conceptual coordination between statistics and planning received much attention in the thirties.[8] The problem came to the forefront during the work on the Second Five-Year Plan and the annual plan for 1934. In the course of compiling the 1935 plan, an interdepartmental committee (consisting of representatives of the *Gosplan*, *TsUNKhU*, heavy industry, and the Commission of Soviet Control) on methodological unity between planning and statistics was constituted.[9] The concrete results of this attempt are not known, but in 1937 (during work on the next five-year plan) and in 1938 the literature registers new complaints on the same subject, this time coupled with accusations of intentional "wrecking."[10]

Methodological Unity

The launching of comprehensive and detailed national economic planning brought up the necessity for thorough consistency and comparability of statistical data, i.e. for a "uniform system of record-keeping" (*edinaia sistema ucheta*) for the entire economy. Considerable efforts were made, especially in the early thirties, to realize this goal.[11] It involved essentially working out (1) standard definitions, (2) mutually consistent definitions for such different items as might be brought together in the course of economic analysis and planning, and (3) uniform and standardized methods of collecting, reporting, and classifying data.

To this end, the power to prescribe, supervise, and direct statistical work throughout the whole economy has been centralized in *TsSU* (and its predecessors),[12] which has been carrying out this

[7] See pp. 18ff.

[8] A list of complaints may be found in A. Sperlina, "Uviazat' pokazateli ucheta s pokazateliami plana" [Coordinate Statistical Indicators with Planning Indicators], *Plan*, 1934, No. 5, pp. 41-43.

[9] *Plan*, 1934, No. 4, p. 65.

[10] *Plan*, 1937, No. 10, p. 61; *P.Kh.*, 1938, No. 3, p. 13; *ibid.*, 1938, No. 7, p. 7.

[11] See, for example, the order of the Supreme Council of the Economy (*VSNKh*), dated July 24, 1931 (*B.F.Kh.Z.*, 1931, No. 26, pp. 20ff.).

[12] The earliest serious step in this direction was apparently the Resolution of the Council of Ministers of May 9, 1931 (see p. 15) which charged the *Gosplan*, and specifically its Sector of Economic Record-Keeping, with this function.

See *B.F.Kh.Z.*, 1931, No. 15, p. 70; it will be recalled that this was shortly

function primarily by standardizing the statistical reporting forms[13] throughout the economy, providing detailed instructions for them, requiring complete adherence to these forms and instructions, and prohibiting the solicitation of unapproved—so-called "wild"—reports. The enforcement of this last injunction has been a major perennial problem for the statistical authorities, as there seems to be a strong propensity on the part of the Soviet (or any other) bureaucracy to bypass established reporting channels and to assert its authority over subordinates by demanding endless periodic and *ad hoc* reports. The subordinates, on their part, apparently find it either impossible to resist these demands or convenient to accede to them as part of a live-and-let-live arrangement.

Despite the early efforts to impose methodological unity, complaints on this score continued well into the thirties and have been cropping up even in more recent years. For instance, as late as 1938 there were two sets of data on the number of workers in large-scale industry, compiled by the industry sector and the labor sector of *TsUNKhU*, respectively.[14] On the same date there was still lack of uniformity in the reporting of tractor work, wages, construction, and so forth.[15] The blame for this situation was laid on "wreckers" and, more justifiably, on the organization of reporting along functional lines (*funktsionalka*), which had led to the drawing up of definitions, forms, and instructions independently by the various sectors of *TsUNKhU*.[16] As we have already seen, these charges contributed to the reorganization of *TsUNKhU* later that year.

Since 1938 such complaints have been much less frequent in the literature. To what extent this is due to less cause for complaint, and to what extent to mounting secrecy, cannot be determined, but time may have brought some improvement in this regard, in any case. There can be little doubt, everything considered, that by now the Soviet system of industrial reporting, as of economic statistics in general, not only is extraordinarily comprehensive, but also possesses a high degree of internal methodological unity.

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before the organization of *TsUNKhU* in December of that year, but after the dissolution of the old *TsSU*.

[13] Forms for the annual report and for all accounting reports are prescribed jointly by *TsSU* and the Ministry of Finance.

[14] *P.Kh.*, 1938, No. 3, pp. 173-175. [15] *Ibid.*, pp. 13-15.

[16] On methodological discrepancies in the reporting by heavy industry due to "functionalism" in *TsUNKhU*, see also M. Tsaguriia, "Voprosy ucheta v sviazi s planom raboty TsUNKhU" [Problems of Record-Keeping in Connection with the Plan of Work of *TsUNKhU*], *Plan*, 1935, No. 12, p. 32.

Directness, Speed, and Volume of Reporting

All statistical systems, of course, aim at completeness of coverage, directness of observation, and timeliness of reporting, insofar as their needs so require and their budgets so allow. But the existence of a command economy in the Soviet case, which shapes the relation of statistics to planning and economic administration, makes these desiderata particularly imperative, while at the same time the authoritarian nature of the regime can demand compliance with a voluminous and highly exacting set of reporting requirements.

Soviet statistics of physical output of industry are thus eventually based on complete or near-complete coverage of all producing enterprises, with all but the smallest of them reporting continuously and under highly standardized conditions. The smallest enterprises are accounted for in periodic censuses. The reporting is always direct, i.e. in units of the product itself, rather than in such indirect measures of output as man-hours worked or materials consumed (which may be reported too, however)—a characteristic which is usually listed among the alleged superiorities of Soviet over "capitalist" statistics. Insofar as some "capitalist" output statistics are based on indirect data, this is so—at least, if the direct information is reliable, and if data-gathering costs are disregarded. The last, in turn, must be seen in the light of differential needs for full, prompt, and exact output information in command and in market economies.

This brings us to the next two features that strike the outside observer: the extremely early due dates for the regular reports, and the enormous volume of reporting in general to which Soviet enterprises and other entities are subject. For instance, comprehensive monthly and quarterly reports must be submitted within 15 days of the end of the reporting period, and the definitive annual report is due by January 25.[17] Output data as such, however, must be reported even faster—within a few days (see Chapter 3)—and are apparently processed, or at least consolidated, equally fast. Witness the fact that since the war *TsSU* has usually published annual, semiannual, and quarterly plan fulfillment reports between the 20th and the 31st day following the end of the period. The annual report

[17] V. I. Pereslegin, *Novoe polozhenie o bukhgalterskikh otchetakh i balansakh* [The New Statute on Accounting Reports and Statements], Moscow, 1952, p. 10. See also Chapter 3, the section on continuous reporting of industrial output.

for 1958 was published in the Soviet press as early as January 16, 1959, and the report for the first half of 1959 as early as July 14, 1959.

There is great pressure on the part of the statistical authorities to ensure the prompt reporting by enterprises and their economic-administrative superiors. The pressure undoubtedly originates with the highest political authorities and the planning agencies, both ever hungry for factual data on which to base policy decisions or routine planning. It is probably reinforced by the fact that, from the standpoint of the statistical authorities, promptness of report submission is a convenient criterion—much more so than the accuracy of the submitted information—by which to appraise the "efficiency" of the reporting system.[18] Nonetheless, tardiness of report submission by enterprises seems to be common.[19] How *TsSU* still manages to publish the periodic plan fulfillment announcements within three or four (or even two) weeks of the close of the period in question remains unclear; presumably a certain amount of estimation of missing data is resorted to on such occasions.

I shall not dwell here on the inordinate volume of reporting,[20] except to note that it entails an enormous amount of recording, bookkeeping, computing, and other paper work.[21] The sheer volume of the work, coupled with the speed that is demanded of much of it, cannot but dilute the quality of the statistics by both inviting error and providing opportunities for distortion to the more skillful practitioners of the art.[22]

[18] Cf. Robert W. Campbell, "Accounting for Cost Control in the Soviet Economy," *The Review of Economics and Statistics*, February 1958, p. 61.

[19] R. W. Campbell, "The Mechanization of Accounting in the Soviet Union," *The American Slavic and East European Review*, February 1958, pp. 73-74.

[20] See G. Grossman, "In the Land of Paper Pyramids," *Problems of Communism*, July-August 1955, for a discussion of this problem and of recent efforts to alleviate it. The problem is an old one; it has been the subject of bitter complaints in the press at least since the beginning of the Plan Era.

[21] It was said in 1953 that 2.3 million persons were engaged in doing work of this sort in the Soviet economy (*P.Kh.*, 1953, No. 4, p. 94). More recently the number was placed at "about three million, almost 80 per cent of whom are engaged in so-called primary record-keeping" (*Pravda*, May 12, 1958). In 1957, over 10,000 separate industrial commodities were subject to regular centralized production reporting (A. N. Efimov, *Perestroika upravleniia promyshlennost'iu i stroitel'stvom v SSSR* [Reorganization of Administration of Industry and Construction in the USSR], Moscow, 1957, p. 90).

[22] The journal of accounting editorially rebuked those chief accountants, "who are still to be found," who hold that "the timely submission of reports is incompatible with their high quality" (*B.U.*, 1954, No. 10, p. 3). Cf. Campbell in *The Review of Economics and Statistics*, p. 61.

CHAPTER 3

The Data and Their Flow

Definition of Output; Nomenclature; Units of Measure[1]

SOVIET usage distinguishes among the following physical results of industrial production:

1. *Finished output* (*gotovaia produktsiia*) comprises the products ready to be shipped out by the given enterprise and is supposed to meet these conditions: (a) passage by the quality inspection department (*otdel tekhnicheskogo kontrolia*, abbreviated as *OTK*), and (b) transfer to the enterprise's finished goods warehouse, or, alternatively, delivery to the buyer. Both (a) and (b) must have taken place by midnight of the last day of the period in question. This is usually formally recorded by the transfer voucher (*sdatochnaia nakladnaia*), which bears the signatures of the head of the producing shop, the *OTK*, and the chief of the warehouse.[2] There is, however, ample evidence (some of which will be referred to in later chapters) that the formalities are not always strictly adhered to. Moreover, these conditions are clearly not applicable to some portions of industrial output, such as electrical energy or "work of an industrial nature," for example.

2. *Semifinished products* (*polufabrikaty*) are the output of a single shop intended for further fabrication within the same enterprise. The distinction between these and finished output depends on the degree of vertical integration of the enterprise. Both are supposed to meet certain minimum technical specifications.

3. *Goods in process* (*nezavershennoe proizvodstvo*) are those whose processing has not yet been completed in the given shop.

[1] On the formal requisites and classification of "output," see: L. M. Volodarskii, *Promyshlennaia statistika* [Industrial Statistics], Moscow, 1954, pp. 19ff.; D. B. Savinskii, *Kurs promyshlennoi statistiki* [A Course in Industrial Statistics], 4th ed., Moscow, 1954, pp. 68-71; S. Shchenkov, *Otchetnost' promyshlennykh predpriiatii* [Reporting by Industrial Enterprises], Moscow, 1952, pp. 35-40; M. Kh. Zhebrak, *Kurs promyshlennogo ucheta* [Course in Industrial Accounting], Moscow, 1950, p. 242; *Planovoe khoziaistvo*, 1955, No. 3, p. 80; and A. I. Ezhov, *Statistika promyshlennosti* [Statistics of Industry], Moscow, 1957, pp. 72-74.

[2] A. Margulis, *Bukhgalterskii uchet v otrasliakh narodnogo khoziaistva SSSR* [Accounting in the Various Branches of the Soviet Economy], Moscow, 1957, p. 191. For machine-building, Ia. S. Bebchuk, *Uchet, kal'kuliatsiia i tekhnicheskaia otchetnost' mashinostroitel'nogo predpriiatiia* [Record-Keeping, Calculations, and Engineering Reporting in the Machine-Building Enterprise], 2nd ed., Moscow, 1954, p. 125.

4. *Work of an industrial nature* (*raboty promyshlennogo kharaktera*) consists of services such as repair (of equipment, shoes, clothing, furniture, etc.), finishing (e.g. plating), and the industrial processing of customers' materials. It includes the "capital repair" of the enterprise's own equipment. It does not include the repair of buildings and structures, which is classified as construction work.

5. *By-products* (*pobochnye produkty*)—see the following item.

6. *Waste products* (*otbrosy, otkhody*) are distinguished from by-products in that the latter are supposedly useful, whereas the former are not, although operationally the distinction rests on whether the goods are or are not included in the national plan along with the so-called basic products.[3]

Only items 1, 2, and perhaps 5 are relevant for our purposes.

Goods that have been rejected by quality inspection within the plant, or by a customer after shipment, for failure to meet minimum quality standards or specifications constitute defective output—the famous *brak* of Russian terminology. All *brak* is supposed to be excluded—or if already included, to be deducted—from the recorded output,[4] although there is ample evidence that it is in fact frequently included (see Chapter 5).

Commodity nomenclature, specifications, and units of measure appear to be standardized, to a large extent, for planning and statistical purposes, and an elaborate commodity classification appears to be in effect.[5] Although in most instances it is possible and practicable to measure a given product in more than one physical unit,[6] generally the enterprise reports the output of a commodity in only one physical unit, namely, and for obvious administrative reasons, the one that is specified in its plan. A few items, however, are reported in two different physical units simultaneously.[7]

But of course many commodities are so heterogeneous that a simple summation in physical terms is of dubious meaning. Soviet statistical practice recognizes this in two ways: (1) when the goods are highly heterogeneous (e.g. spare parts, or a broad category

[3] Savinskii, *op.cit.*, p. 70.

[4] With one exception; see p. 68.

[5] Extracts of such a commodity classification are reproduced in Ezhov, *op.cit.*, pp. 76f. I have no information as to when the classification was introduced. Nor have I seen evidence of a classification of *industries* as systematic and detailed as the Standard Industrial Classification in the United States.

[6] For example, textiles—in linear meters, square meters, or tons; flat objects (glass, leather)—in square meters or tons; fluids—by weight or volume; equipment—in units, by weight, or in power capacity (e.g. kw); and so forth.

[7] Shchenkov, *op.cit.*, p. 52.

such as "furniture"), they are accounted for in value terms only; and (2) when the commodity is a heterogeneous one, but nonetheless possesses some measurable characteristic, it may be converted into equivalents, that is, into so-called "conventional physical units" (*uslovnye natural'nye izmeriteli*). In the latter case, the conversion factors are chosen either according to relative consumer "utility" (often merely a simple technological property) or according to relative labor-intensity of production. The former method of conversion seems to be the more common one. Thus, tractors of different horsepower rating are converted into conventional units of 15 hp each; freight cars of different load capacity, into two-axle units; soap of different fat content, into standard units of "solid household soap with 40 per cent fat content"; nitrogenous fertilizers, into units of ammonium sulfate; fuel, into conventional units of coal containing 7,000 calories per kg; building stone, into units of conventional structural brick; and so forth. Where no such technological conversion is advisable or meaningful, but aggregation is nonetheless desired, relative labor-intensity is sometimes used, for instance, in children's and men's footwear.[8] However, it seems that even when reduction to "conventional physical units" takes place, the enterprises also report the corresponding figure in natural units, and the published statistics apparently are expressed more often than not in natural units.

As may be expected in the case of a command economy such as the Soviet one, the designation of the unit of measure, together with the closely associated problem of commodity nomenclature and quality specification, is of very great importance. These are the categories in terms of which plans are drawn up, production commands issued, allocation of chronically scarce supplies made, and, last but decidedly not least, the performance of enterprises judged. The statistical categories automatically become, in Alec Nove's apt phrase, "success indicators,"[9] and therefore the planners and pro-

[8] On the conventional physical units, see especially *Slovar'-spravochnik po sotsial'no-ekonomicheskoi statistike* [Dictionary and Manual on Social and Economic Statistics], Moscow, 1948, p. 111; Savinskii, *op.cit.*, pp. 78-80; and Ezhov, *op.cit.*, pp. 78-80. The last source gives sets of conversion coefficients for soap, nitrogenous fertilizers, and shoes. An interesting critique of the conversion of tractors to 15 hp units appeared in *P.E.G.*, Sept. 14, 1958, p. 3.

[9] A. Nove, "The Problem of 'Success Indicators' in Soviet Industry," *Economica*, February 1958, pp. 1-13. This is a very informative discussion of the problem of "success indicators" in Soviet industry and of the recent Soviet struggle with it. A quite different struggle with the problem of nomenclature

ducers cannot remain neutral toward them. For the purpose of this study, the significance of nomenclature and units of measure is twofold. First, there is the question of the descriptive precision (or better, its opposite—ambiguity) with which the commodities are designated in the published statistics, and of the stability of the nomenclature over time. This question will be referred to again in Chapter 7. Secondly, there is the problem of the response of enterprises to the "success indicators," and its likely impact on the reliability of Soviet physical output data. This is taken up in the section on devaluation of the physical unit of measure in Chapter 5.

Continuous Reporting of Industrial Output

Soviet statistics of the physical output of industry are compiled in two ways: by continuous reporting on the part of the larger enterprises, and by periodic censuses of the smaller ones.

The range of continuously reporting enterprises in the earlier period corresponded with large-scale industry.[10] The distinction between large- and small-scale industry had its genesis in prerevolutionary statistics (which did not cover most small establishments) and was taken over, partly for reasons of expediency, by the first (1918) Soviet census of industry. That census enumerated all industrial establishments which met the general qualification of employing at least 16 persons with the aid of mechanical power or at least 30 persons without mechanical power, or which met certain special qualifications in many branches of industry. The Russian word for this kind of qualification is *tsenz*, and the aggregate of establishments meeting it was therefore known in the early period as *tsenzovaia promyshlennost'*, which is usually, but inexactly, rendered into English as "census industry." The general limit of 16 (or 30) persons remained as the dividing line between large- and small-scale industry, but the specific qualifications for certain branches underwent considerable evolution.[11] With the development

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and units of measure, in the U.S. War Production Board, is discussed by D. Novick and G. A. Steiner in *Wartime Industrial Statistics*, Urbana, 1949.

[10] See the resolution of the Council of Labor and Defense on reporting by state, cooperative, and private enterprises, etc., dated March 7, 1922, published in *Ekonomicheskaia zhizn'*, March 25, 1922 (also in *Biulleten'*, No. 64, April 16, 1922, pp. 41-43).

[11] This evolution can be traced from the following sources: Ia. P. Gerchuk, "Promyshlennaia statistika" [Industrial Statistics] in V. E. Den and B. I. Karpenko, *Khoziaistvennaia statistika SSSR* [Economic Statistics of the USSR], Leningrad, 1930, p. 142; *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Con-

of planning, the notion of large-scale industry (i.e. continuously reporting industry) based on size alone with no relation to the administrative context became inconvenient. Thus, sometime between 1936 and 1944, all "basic" enterprises, regardless of size, subordinate to *industrial* (though not other) ministries, but excluding enterprises of district significance only, were incorporated into the concept of large-scale industry, and have been reporting continuously ever since.[12]

Reporting by the individual enterprise is rigidly governed by its prescribed roster of reports (*tabel' otchetnosti*) and is largely done on standard forms prescribed by *TsSU* and the Ministry of Finance. *TsSU* specifies a minimum list of products (*nomenklatura izdelii*) whose physical output is subject to continuous centralized reporting by all producers. This list is based on, but is somewhat longer than, the range of products in the annual economic plan.[13] Production for the enterprise's own use is not exempt from reporting.[14] In addition, ministries and their subdivisions—and, since 1957, presumably also the *sovnarkhozy* (regional economic councils) and *their* departments—impose additional reporting requirements on subordinate enterprises, so that the individual enterprise often has to submit long, frequent, and detailed production statistics (not to mention other information).[15]

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struction in the USSR], Moscow, 1936, p. 703; *Slovar'-spravochnik po sotsial'no-ekonomicheskoi statistike* [Dictionary and Manual on Social and Economic Statistics], Moscow, 1944, p. 55; S. Genin, "Edinovremennyi uchet melkoi podsobnoi promyshlennosti" [One-Time Survey of Small-Scale Subsidiary Industry], *V.S.*, 1951, No. 1, p. 87; and Savinskii, *op.cit.*, p. 58.

[12] *Slovar'-spravochnik*, 1944, pp. 55f.; Genin, *op.cit.*, p. 87.

[13] *Slovar'-spravochnik*, 1948, pp. 110f.; A. I. Ezhov, *Promyshlennaia statistika* [Industrial Statistics], Moscow, 1954, p. 64. The most useful sources on the formal aspects of industrial reporting are the two books by Shchenkov (*op.cit.* and *Bukhgalterskii uchet v promyshlennosti* [Accounting in Industry], Moscow, 1955).

[14] An apparent exception to this is the output of building materials by subsidiary units of construction enterprises. Such output is not (or at least at one time was not) reported in value terms, and presumably also not in physical terms (Shchenkov, 1952, *op.cit.*, p. 36).

[15] See sample lists for enterprises in Ezhov, *Promyshlennaia statistika*, pp. 64-66. Some improvement in this regard was brought about by the drive to reduce the excesses in planning and statistical reporting conducted during 1954 and 1955 (see G. Grossman, "In the Land of Paper Pyramids," *Problems of Communism*, July-August 1955, pp. 18-26), and presumably also in connection with the 1957 reorganization of industry. Yet as we have already seen, over 10,000 separate industrial commodities were still subject to *centralized* regular production reporting in 1957 (A. N. Efimov, *Perestroika*

The enterprise has been required to report physical output data by *telegraph*, daily or every ten days for the most important commodities (e.g. fuel, power, steel), and monthly and quarterly for the full range of products subject to reporting.[16] Before the middle of 1957 these reports were dispatched only to the appropriate higher level within the ministerial organization; since then, they have been dispatched directly to *TsSU*, and possibly also to the *sovnarkhoz* or one of its subdivisions. In addition, another monthly report containing substantially the same information, but on standard forms, is submitted by mail, and must be sent out by the third day of the month following the month reported on. The definitive annual report has to be sent out by the 25th of January. The so-called current (i.e. more-frequent-than-annual) reports are signed by the director of the enterprise, the chief accountant, and the head of the planning department. Annual reports are signed by the first two only.

Before the middle of 1957 the enterprise submitted its (mailed) monthly and annual reports simultaneously to its superior in the economic-administrative hierarchy—"trust," *glavk* (chief administration), etc.—to the district inspector of *TsSU*, and to the *oblast'* statistical administration. (The annual report went, and presumably still goes, to the local branch of the *Gosbank* as well.) Thus the data entered and flowed upward through two channels, the economic-administrative hierarchy and the statistical apparatus, as Chart 1 shows. The intermediate echelons were not only formally charged with ascertaining the timeliness, completeness, and accuracy of the reports, but were also expected to analyze their substantive content and to render written evaluations of the work of the enterprise within ten to fifteen days of the receipt of each report from an enterprise. This exacting requirement by itself goes far to explain the prevailing tendency at the intermediate levels to mini-

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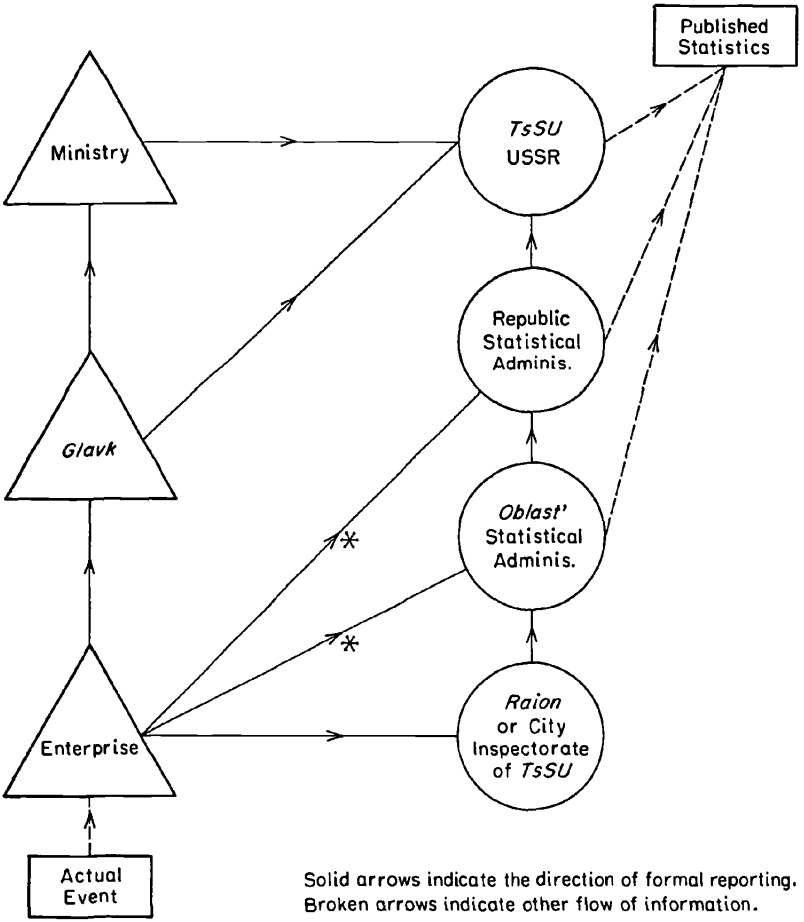
upravleniia promyshlennost'iu i stroitel'stvom v SSSR [Reorganization of Administration of Industry and Construction in the USSR], 1957, p. 90) and, before the abolition of industrial ministries in that year, an enterprise would have to report regularly on over 100 forms, 60 to 70 of which came under centralized reporting and the remainder of which were prescribed departmentally (*ibid.*, p. 94).

[16] The information in this paragraph rests primarily on Shchenkov's two books (*op.cit.*); cf. L. M. Volodarskii, *Statistika promyshlennosti i voprosy planirovaniia* [Statistics of Industry and Planning], Moscow, 1958, p. 26. Seventy-three products are subject to monthly telegraphic reporting (*V.S.*, 1959, No. 3, p. 69).

CHART 1

The Flow of Statistical Data Until Mid-1957
(from the actual event to the published statistics)



* In the union republics divided into *oblasti* the enterprise reported to the *oblast'* statistical administration; otherwise, directly to the republic statistical administration.

Note: For the sake of simplicity, this chart (unlike Chart 2) does not show the submission of consolidated reports by the various levels of the statistical apparatus to the corresponding levels of the Party, the government, and the planning hierarchy. For the same reason, it is here assumed that the ministry is a "union" one. A "republic" ministry or a "union republic" ministry on the republic level, and its *glavki*, presumably reported to the republic statistical administration, rather than to *TsSU*. Nor does the chart fully apply to "local industry."

mize analysis and to concentrate on mere totaling and tabulation.[17] The reports submitted by these echelons were on the same forms as the reports of enterprises. Ministries and chief administrations appended tables showing frequency distributions of enterprises within their purview arranged by degree of plan fulfillment and stating the amounts of the most important products that were not produced due to plan underfulfillment.[18] Beginning with 1953, other tabulations—on labor productivity, cost of production, and utilization of equipment—also had to be submitted by the intermediate levels with their periodic reports.[19]

Whether incidentally or by design, the system of parallel flows of reporting afforded an opportunity to check on distortion at intermediate levels, although I have no evidence that such checks were in fact conducted. But the main reasons for this parallelism were, one suspects, that the ministries and their subdivisions insisted on receiving output data more promptly than the statistical apparatus could supply it and that they did not want to depend on the statistical apparatus for information from the enterprises under their jurisdiction. At any rate, as long as the ministries existed, they refused to give up their part of the parallel flows.[20] As we shall see presently, there is reason to believe that the parallelism created a certain amount of tension and jealousy between the statistical authorities and the economic hierarchy, which may not have been entirely unwelcome to the regime.

The abolition of the industrial ministries in 1957 and their replacement by regional economic councils (*sovnarkhozy*) of necessity destroyed *that* system of parallel statistical flows, but could conceivably have created another one resting on the network of *sovnarkhozy*. This did not happen, at least formally, and the statements of high statistical officials at the time gave the definite impression that they seized the opportunity provided by the administrative reform to forestall it.[21] There may also have been a good deal of

[17] Cf. I. Dugin, "O nekotorykh nedostatkakh v rabote s kadrami" [On Certain Shortcomings in Personnel Work], *V.S.*, 1951, No. 5, p. 55; and *V.S.*, 1955, No. 1, p. 82.

[18] Shchenkov, 1955, *op.cit.*, p. 387.

[19] *V.S.*, 1952, No. 1, p. 19.

[20] At least this is what Starovskii, head of *TsSU*, alleged when the ministries were about to be abolished (*V.S.*, 1957, No. 4, p. 15).

[21] See the editorial in *V.S.*, 1957, No. 2; Starovskii's talk at an all-union conference of statistical workers, June 4, 1957, reported in *V.S.*, 1957, No. 4, pp. 12ff.; and a brief account of the same conference in *P.E.G.*, June 12, 1957, p. 3.

maneuvering by interested parties on this issue while the industrial reorganization was still being drafted and discussed. This much is suggested by the vacillation on the subject of statistics (and indeed on the reform as a whole) in the language of the successive official statements on the industrial reorganization. The initial resolution of the plenary session of the Central Committee, dated February 14, 1957,[22] spoke only in passing of "strengthening the whole system of state statistics." A month and a half later, in his so-called "theses" on the reorganization of industry,[23] Khrushchev took a definite stand in favor of elimination of parallel flows and of what came to be referred to as the "centralization of record-keeping and statistics." He explicitly stated that, under the new conditions, "industrial enterprises and construction projects [*stroiki*] [would] submit reports containing a minimum number of items [and] only to the agencies of *TsSU* SSSR." This seemed to rule out the submission of *any* reports to the enterprises' administrative superiors, and may be taken as a complete victory for the statistical authorities. However, a little over a month later, on May 7, 1957, in his talk on the proposed industrial reorganization at the Seventh Session of the Supreme Soviet, while repeating the position of his "theses" on the centralization of record-keeping and statistics, he failed to state explicitly that enterprises would submit their reports *only* to the statistical agencies.[24] It is not unlikely that during that month this had become an issue.

Speaking before the all-union conference of statistical workers that convened in Moscow between June 4th and 8th, 1957, to discuss the reforms, Starovskii, the head of *TsSU*, elaborated on the brief paragraphs on statistics in Khrushchev's speeches. The reorganization of industrial administration, he stated, "removes the hitherto existing barriers to the liquidation of parallel reporting . . ." and now that the ministries are to be abolished, "there are no more obstacles to the centralization of *uchet*." He continued: "The agencies of *TsSU* will now receive all the necessary reports directly from enterprises subordinated to the *sovnarkhozy*, will process them and submit the appropriate data to the *sovnarkhozy* . . . *TsSU* will process the statistical data by territory and branch [*otraslevoi*] classifications

[22] *Pravda*, Feb. 16, 1957.

[23] *Pravda*, March 30, 1957.

[24] *Pravda*, May 8, 1957, p. 4. He did say somewhat vaguely that the collection and processing of reported data would be "concentrated" in the agencies of *TsSU*. It may also be noted that the law on industrial reorganization passed three days later omitted all reference to statistics (*Pravda*, May 11, 1958).

and will submit them to the Government and to the *Gosplan.* No other parallel source of data should be retained; there is absolutely no need of that." He further promised a considerable reduction in the volume of reporting, and called for the establishment of offices ("stations") for machine-processing of data, one in each of the over one hundred newly founded economic regions. While the *sovnarkhozy* are thus to rely on the information transmitted to them by the statistical apparatus, he conceded that, "as far as some reports are concerned, *it seems* that *it will be necessary* to retain the practice of submitting a second copy to the appropriate trust or other agency subordinate to the *sovnarkhoz.* However, the local agencies of *TsSU* will have to handle the consolidation and processing of data in such a way that the *sovnarkhozy* receive them in time, and that there be no need for parallel processing of reports in the *sovnarkhozy.* The second copy [submitted directly to the trust, etc.] should be used only as a source of information for individual enterprises." He added that the proposed system was to be a serious test of timeliness and accuracy for the statistical apparatus.[25]

The compromise did not seem to satisfy everyone on both sides. An official of the (then doomed) Ministry of the Coal Industry, apparently expressing the view of an economic administrator, complained "sharply" that the statistical authorities underestimated the importance of direct reporting by enterprises to their superiors for planning and day-to-day management, and argued that more of the "departmental" reporting be salvaged.[26] On the other hand, the chief of the Leningrad statistical administration asserted that if the "branch administrations" of the *sovnarkhozy* were permitted to receive copies of enterprise reports at all, they would not be content to limit their use to managerial functions, but would revive the "vicious" practice of parallel processing of data.[27]

Be that as it may, parallelism in the flow of reporting has been, at least formally, abolished, although a copy of each report is submitted by the enterprise to its administrative superior within the *sovnarkhoz* framework, "not for consolidation, but only for use in the direction of enterprises."[28] The local statistical administrations must transmit to the *sovnarkhozy,* between the fourth and sixth day

[25] *V.S.*, 1957, No. 4, pp. 12-17. My emphasis.

[26] See summary of statement by A. G. Pervukhin at the conference (*ibid.*, p. 24).

[27] *Ibid.*, p. 34.

[28] Ezhov, *Statistika promyshlennosti,* p. 24.

of the month, data on plan fulfillment by the enterprises during the preceding month. However, it is admitted that this information is sometimes tardy.[29] Under the new conditions the local agencies of the statistical apparatus are also charged with assembling and compiling materials on the basis of which the *sovnarkhozy* draft their plans. The chief measures on industrial reporting that *TsSU* is said to be working on now are: reduction and simplification of record-keeping and reporting; mechanization of data processing (utilizing the network of machine "stations" referred to above); and the working out of techniques to detect autarkic and "localistic" tendencies in the economic regions.

The new pattern of the flow of reporting is shown in Chart 2.

Censuses of Small-Scale Industry

Small-scale industrial enterprises (later, only the *subsidiary* enterprises among them as far as *industrial* ministries were concerned) have been exempt from continuous reporting, and their output has been accounted for instead by periodic surveys and censuses. As an exception, monthly reports were required of small-scale subsidiary enterprises (except those belonging to collective farms) between 1949 and 1954, although annual censuses of small-scale industry continued through this period as well.[30] In 1954 there were about 50,000 subsidiary small-scale industrial enterprises, presumably excluding enterprises subsidiary to *kolkhozy*, and they were said to account for less than 4 per cent of the gross output of industry.[31] However, in some branches of industrial production, particularly in consumer goods and building materials, their relative share was presumably considerably larger than that. And, of course, in earlier years these shares were much larger.

It should be noted that before 1933 the censuses of small-scale industry did not inquire into output in physical units; nor was there any census of small-scale industry for 1928, or 1927/28, the benchmark dates for many studies of the Soviet economy. Rather, the official data for *all* industry for that year are presumably summations of the *reported* output of large-scale industry and corresponding

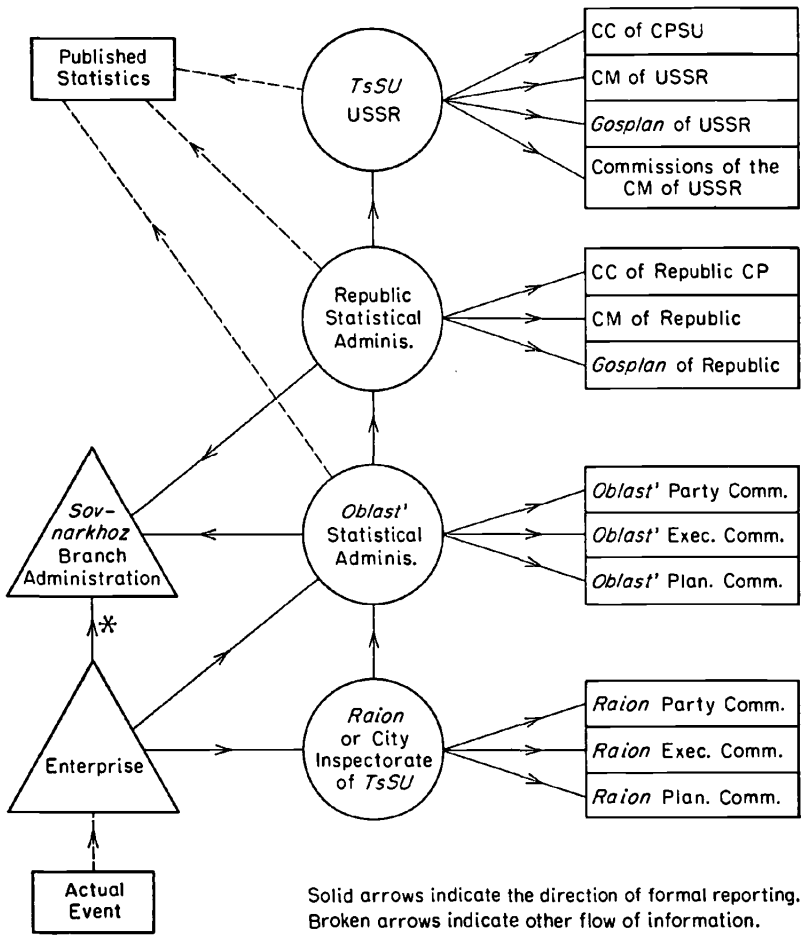
[29] L. M. Volodarskii, "Organy gosudarstvennoi statistiki v novykh usloviiakh" [The State Statistical Agencies in New Conditions], *P.E.G.*, July 6, 1958, p. 3. The author is deputy chief of *TsSU SSSR* in charge of industrial statistics.

[30] B. Glusker and P. Krylov, "O sisteme pokazatelei narodnokhoziaistvennogo plana" [On the System of Indicators in the Economic Plan], *P.Kh.*, 1954, No. 5, p. 86; and Genin, *op.cit.*, p. 88.

[31] Glusker, *op.cit.*, p. 81.

CHART 2

The Flow of Statistical Data After Mid-1957
(from the actual event to the published statistics)



Solid arrows indicate the direction of formal reporting.
Broken arrows indicate other flow of information.

* The enterprise submits a copy of its report to the branch administration of the *sovnarkhoz* ostensibly for operational purposes only.

CC = Central Committee
CM = Council of Ministers
CP = Communist Party
CPSU = Communist Party of the Soviet Union

Note: If the republic is not divided into *oblasti*, the enterprise reports directly to the republic statistical administration. The chart does not fully apply to industry subordinated to local soviets (as opposed to *sovnarkhozy*).

Source: Ezhov, *Statistika promyshlennosti*, 1957, p. 25.

estimates for small-scale industry. The estimates were based on information in the possession of internal revenue authorities, and in part on the outdated results of the 1925 census of small-scale industry.[32] The latter source was of little consequence for estimating physical output of small-scale industry, as it had not inquired into that aspect.[33]

This raises the question of possible underestimation of the industrial statistics for 1928, since write-downs in reports to fiscal authorities, especially by private firms and individual craftsmen, may well be suspected because of (1) the desire to avoid or lighten the tax burden, and (2) general noncooperation with the representatives of a "socially hostile" regime. Underreporting was undoubtedly facilitated by the fact that most small-scale enterprises kept no systematic records whatever.[34]

This suspicion is confirmed by an official comment on the next census of small-scale industry, conducted in late 1929 and early 1930, and covering the operating year 1928/29: "It is necessary to note a certain understatement of the data for the capitalist sector. The understatement arises from the tendency of the private entrepreneur to conceal the actual volume of his output, the extent of labor employment, his receipts, etc., which has had a particular impact on the data due to the coincidence of the census period with intensive collectivization [of agriculture] in a number of regions. The underrecording in the private sector is partly compensated by the inclusion of data on home-workers, under the putting-out system, in the private capitalist sector."[35] The census attributed only 0.9 per cent of all gainfully employed and 2.8 per cent of gross value of output to the capitalist sector within small-scale industry.[36] Thus, presumably, the understatement might not have been very large compared to the total output of small-scale industry, and even

[32] Ezhov, *Promyshlennaia statistika*, p. 378.

[33] See *Trudy TsSU SSSR* [Works of the Central Statistical Administration], Moscow, 1926-1928, Vol. 33, Part 2. There was also a sample survey of small-scale industry in 1927 (see *Narodnoe khoziaistvo SSSR* [The Economy of the USSR], Moscow, 1932, p. 684); its results are adjudged unsatisfactory by R. Kh. L'vova ("Razvitie metodologii ischisleniia ob'emnykh pokazatelei promyshlennoi produktsii SSSR" [Development of the Methodology of Calculating Indicators of the Volume of Industrial Output in the USSR] in *Ocherki po istorii statistiki SSSR* [Essays on the History of Statistics in the USSR], Moscow, 1955, p. 229).

[34] Ezhov, *Promyshlennaia statistika*, p. 378.

[35] *Narodnoe khoziaistvo*, 1932, p. 647. "Private capitalist" establishments were those employing at least three hired persons.

[36] *Ibid.*, p. 97.

less compared to the output of all industry, to which small-scale industry contributed 20 per cent in 1928/29 according to the census. But it might possibly have been appreciable with regard to individual products, especially consumer goods.[37]

The question of a similar bias in the data on the private *noncapitalist* ("petty commodity") sector, which comprised artisans and handicraftsmen, was not raised in the same context. According to the census, this sector accounted for 73.8 per cent of all gainfully employed and 45.1 per cent of the gross value of output in small-scale industry. Nonetheless, it seems plausible that similar considerations might have prompted the producers in this sector to underreport their output. That is, the understatement of the output of some commodities by the 1928/29 census might have been considerable.

Another method could have been used in retrospect to estimate the output of small-scale industry in 1928, namely, backward extrapolation from the census for 1928/29. While I have seen no indication in the literature that this method was used for *physical* output statistics, this was very likely the method used to obtain the estimate of the gross *value* of output of small-scale industry for 1928 that appears in Krasnolobov's authoritative and well-known article.[38] The census figure for the gross value of output in 1928/29 is 5.32 billion rubles at current prices,[39] which were 8 to 10 per cent higher than 1926/27 prices.[40] Deflating accordingly, one obtains 4.84 to 4.93 billion rubles at 1926/27 prices; Krasnolobov's implicit figure for 1928 is 4.97 billion rubles at 1926/27 prices. If this is the way Krasnolobov obtained his estimate for the value of output of small-scale industry in 1928, if (as I have just suggested) the gross value of output of small-scale industry was understated in the 1928/29 census even more than the official comment indicates, and if there actually was no substantial increase in the output of small-scale industry from 1928 to 1928/29 (as seems reasonable in view of the

[37] The census showed that small-scale industry was responsible for over one-third the total output of manufactured consumer goods (cf. M. Podgoretskii, "Vsesoiuznaia registratsiia predpriiatii sotsialisticheskoi promyshlennosti" [All-Union Registration of Socialist Industrial Enterprises], *Plan*, 1934, No. 7, p. 5).

[38] N. Krasnolobov, "Faktory rosta narodnogo dokhoda v sotsialisticheskom obshchestve" [Factors in the Growth of National Income in a Socialist Society], *Problemy ekonomiki*, 1940, No. 9, p. 62.

[39] *Narodnoe khoziaistvo*, 1932, p. 84.

[40] G. Demirchoglian, "Nekotorye itogi perepisi promyshlennosti SSSR za 1933 g." [Some Results of the Industry Census for 1933], *Plan*, 1935, No. 8, p. 10.

political and economic climate of the time), then Krasnolobov's figure for the gross value of output of *all* industry in 1928, which is the most complete of all such Soviet figures for that year, may be on the low side.

The unsuccessful attempts in 1931 and 1932 to cover the output of small-scale establishments by questionnaires have already been mentioned.

In 1933 an economic plan was drawn up for the first time for all industry, rather than for large-scale industry only,[41] and the first of a more regular succession of censuses of small-scale industry was taken for that year early in 1934. This census, like its successors, inquired into output in physical terms. Although it was less extensive than the census of 1929, covering only enterprises with at least three workers or a mechanical source of power (but including even smaller subsidiary enterprises of collective and state farms) and omitting the now less important private sector entirely, *TsUNKhU* estimated that the resulting underevaluation amounted to only about 100 million current rubles of gross output.[42] In connection with this census a complete registration of all industrial enterprises, large and small, was carried out, the success of which was credited to the newly established network of local statistical agencies.

Thereafter, as we have seen, censuses of small-scale industry were conducted for 1935, 1937, and annually until 1954, with the exception of 1948. It was decided in 1954, in conjunction with a determined campaign to simplify paper work and to reduce administrative staffs, to limit the taking of censuses of small-scale subsidiary enterprises to two years out of every five. At the same time, such enterprises were relieved of the necessity of reporting monthly, which (as we have seen) was introduced for them in 1949.[43]

[41] Savinskii, *op.cit.*, p. 59.

[42] Demirchoglian, *op.cit.*, p. 10 footnote; cf. Podgoretskii, *op.cit.*

[43] See Ezhov, *Statistika promyshlennosti*, pp. 30-34, for the content of the censuses. 1955 was a census year according to this source.

PART TWO
THE QUALITY OF THE DATA

CHAPTER 4

Soviet Concern with Reliability; Errors; Mechanization

Soviet Concern with Reliability

EVEN a cursory reading of the Soviet literature reveals that the central statistical authorities have been well aware of the imperfect reliability of the data submitted to them. A closer study leaves no doubt that they have been gravely concerned over the problem, and that the question of accuracy of physical output data occupies the very center of this concern. It is also clear that the main source of inaccuracy is believed to be distortion of reported data by interested parties, aided by the negligence, if not abetted by the connivance, of the lower statistical agencies.

It is quite understandable that concern with data reliability should have been greatly intensified, as it was, in the early thirties, in view of the changes in the internal political atmosphere, the reorganization of industrial structure and management, especially the transition to a full-blown command economy, the turbulent economic conditions in general, and the mounting pressure for plan fulfillment, that characterized those years. It is also noteworthy that within two months of the completion of the First Five-Year Plan the USSR Supreme Court issued a resolution, dated February 27, 1933, which read (in part): ". . . The special attention of courts must be directed to the following criminal acts in record-keeping and reporting . . . 6. Premeditated submission of incorrect data with the purpose of indicating fulfillment or overfulfillment of a plan."[1] This was followed in the same year by a resolution of the Central Executive Committee (*Tsentral'nyi ispolnitel'nyi komitet*, abbreviated as *TsIK*) and *SNK SSSR*, entitled "On the Liability for the Submission of Incorrect Statistical Information and Reports, and for the Violation of Forms and Dates of Submission of Statistical Materials and Reports," dated November 27, 1933. It extended certain sections of the criminal code of the union republics to apply to "intentional," "systematic," and "malicious" acts of the sort indicated in its title.[2]

[1] *Sbornik postanovlenii Verkhovnogo Suda SSSR* [Collection of Resolutions of the USSR Supreme Court], Moscow, 1946, pp. 18f., as cited in Kh. E. Bakhchisaraitsev, *Spravochnik po zakonodatel'stvu dlia rabotnikov gosudarstvennoi promyshlennosti SSSR* [Legal Manual for Personnel in State Industry of the USSR], Moscow, 1951, p. 499.

[2] *Sobranie zakonov i rasporiazhenii Raboche-krest'ianskogo pravitel'stva SSSR*

Although the specialized literature of the middle thirties was on the whole more preoccupied with statistical organization, methodology, and coverage than with data reliability, it did occasionally reveal the seriousness of the authorities' concern on this score. For instance, the administrator of *TsUNKhU*, A. I. Kraval', is reported to have told the all-union conference on industrial statistics in December 1935 that: "The struggle against distortions in record-keeping and deception in reporting . . . must become an integral and important part of the work of statistical agencies."[3] Only a little over a year later, such distortions and deceptions were among the charges thrown at the alleged "wreckers" within the statistical apparatus, among them Kraval' himself.[4]

Since the middle of 1948, concern with the reliability of statistical information has been openly and frequently expressed in the specialized literature. It will be recalled that this was one of the reasons cited for the separation of the statistical apparatus from the *Gosplan* in August 1948, and attainment of a high level of data reliability was one of the principal assignments given to the new *TsSU* at the time. Shortly thereafter, on September 22, 1948, *TsSU* issued an order demanding that the personnel of the statistical apparatus "ensure the collection of truthful, scientifically justified, rigorously checked, and reliable statistical data, and fight against any outcropping of 'localistic' [*mestnicheskie*] tendencies in statistical work."[5] Similar orders are said to have been issued on subsequent occasions after inspection of the work of various local statistical offices. The question of data reliability has been—at least until the mid-fifties—one of the dominant themes of the editorials and articles in *Vestnik statistiki*, the organ of the new *TsSU*, and of the various other publications emanating from the statistical authorities in recent years.[6] Virtually every address by the administrator of *TsSU*,

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[Collection of Laws and Decrees of the Workers' and Peasants' Government of the USSR], Moscow, 1933, No. 70, p. 417, as cited in Bakhchisaraitsev, *op.cit.*, p. 499.

[3] *Plan*, 1936, No. 3, p. 27. [4] Cf. *Plan*, 1937, No. 8, pp. 22-26.

[5] I. Dugin, "O nekotorykh nedostatkakh v rabote s kadrami" [On Certain Shortcomings in Personnel Work], *V.S.*, 1951, No. 5, p. 55.

[6] E.g. L. M. Volodarskii, *Promyshlennaia statistika* [Industrial Statistics], Moscow, 1954, pp. 11-13; *idem*, "Gosudarstvennaia statistika i narodnokhoziaistvennoe planirovanie" [State Statistics and Economic Planning], *V.E.*, No. 8, 1955, p. 21; *idem*, *Statistika promyshlennosti* [Statistics of Industry], Moscow, 1956, p. 14; *V.S.*, 1952, No. 4, p. 13; 1953, No. 1, p. 23; 1958, No. 6, p. 20; and especially the editorial entitled "Reliability—the Most Important Law of Soviet Statistics," 1952, No. 2, pp. 8-20.

Starovskii, by one of his chief lieutenants (Volodarskii, Ezhov), or by one of the regional heads of the statistical apparatus before the frequent periodic conferences of statisticians from 1951 through 1953 dwelt at length on the theme of reliability.[7] It seems that in those years Starovskii hardly addressed his subordinates on any other subject, at least judging by the summaries printed in *Vestnik statistiki.*

The campaign to ensure the reliability of data submitted to the statistical offices reached its high mark approximately in 1952. After early 1953—that is, after Stalin's death—the campaign, as such, virtually disappeared from the pages of the specialized literature, although occasional references to the problem of data reliability have continued to appear. On the other hand, no outright claim of substantial improvement in this respect has been made by the statistical authorities. It is difficult for the outside observer to decide whether there has in fact been any such improvement in recent years, or whether the apparent subsidence of the campaign was largely due to the internal political shifts following Stalin's death, coupled with the usual spasmodic occurrence of such events in the Soviet Union.

The existence of the problem of data reliability has been attributed to the presence of "individual persons in enterprises and ministries" who try to "embellish the true state of affairs, to conceal or minimize mistakes and defects by inserting false data in their reports."[8] These individuals, it is said, are a small, irresponsible, dishonest, and unconscientious minority; but few as they are, their work is insidious and must be thwarted. How can these dishonest few get away with their shady acts? They can, it is admitted, because not all functionaries of the statistical apparatus are sufficiently alert or conscientious.

Hence there is the insistence that the record-keeping and reporting of enterprises and departments be subjected to constant and thorough supervision and checking. But checking cannot reveal irregularities where there is strong intention to conceal and little motivation to uncover. This explains the exhortations to honesty and uprightness on the part of those who submit the data and those who receive them. Thus we read in an article over the signature of the deputy chief of the personnel division of *TsSU* SSSR:[9]

[7] E.g. *V.S.*, 1951, No. 2, pp. 91-95, and No. 6, pp. 92-95; 1952, No. 2, pp. 92-95, and No. 5, p. 88.

[8] *Ibid.*, 1952, No. 5, p. 88. [9] Dugin, *op.cit.*, pp. 53 and 55.

"The chiefs of the statistical administrations of the union republics must pay close attention to the personnel of the local agencies of *TsSU*; they must proceed painstakingly with the selection and deployment of [statistical] workers; they must educate them in the spirit of honesty, truthfulness, and responsibility for assigned tasks; they must analyze the personnel, replacing the unsuitable workers and promoting to responsible positions the able and promising ones. . . .

"The chiefs of the statistical administrations must insist that, in resolving any question, all statistical workers bear only the interests of the state in mind, that they defend these interests in matters small as well as large, that they counter all expression of activity against the state, of localistic and narrowly departmental interests, and all forms of writing-up, misrepresentation, deception of the state, etc. . . ."

A year later, an editorial entitled "Raising the Standards of Performance of the *Raion* and City Inspectorates of *TsSU* SSSR" asserted:[10]

"Truthfulness and adherence to principle are the distinguishing characteristics of the Soviet statistician. [This statement, of course, really means that there is some question of that.—G.G.] Everything that *raion* and city inspectors, as all other Soviet statisticians, do must be suffused with a zeal to depict the actual state of affairs correctly, objectively, and honestly. In all their work *raion* and city inspectors, as all Soviet statisticians, must adhere to [high] principles, and must place the interests of the state above everything else. [Such interests] . . . require that Soviet statisticians produce absolutely reliable data, which permit the drawing of accurate inferences on the condition of the economy and the resolution of questions of its further development.

"*Raion* and city inspectors are called upon to lead a decisive struggle against anti-state tendencies, against the attempts of some workers to place narrowly departmental and particularistic interests above those of the state, against attempts to distort reported data—to conceal unused equipment, raw materials, and supplies from the state, or to include in the reports of plan fulfillment output that has not been actually produced."

[10] *V.S.*, 1952, No. 4, p. 13. Cf. the editorial in *V.S.*, 1955, No. 6, where the references to honesty are implicit however.

It is worth noting that the exhortations to honesty and appeals to high principles in these and other passages are aimed chiefly at the lowest levels of the statistical apparatus, that is, at those levels which come into immediate contact with the suppliers of data, and where, therefore, control is most crucial and corruption most likely.

The suppliers of data—especially the accountants of the enterprises and departments—must also remember their principles. A well-known text on accounting in the industrial enterprise prefaces its section on the keeping of records of finished output with the following remarks:[11]

"The quantity of output can be ascertained from the primary documents on the transfer of finished products [to the warehouse]. However, it is not a matter of the simple arithmetic addition of the data on output recorded [in the documents]. It must be remembered that such an economically and politically important indicator as the fulfillment of the output plan is determined from these computations. Therefore, the absolute accuracy and truthfulness of this indicator must be assured. Any deviation from absolute accuracy and truthfulness on the part of the figure for output represents, in our country, a deception of the state and constitutes a crime. In distinction to capitalist records, Soviet records in general, and the accountant's records of output in particular, give a completely objective picture of actuality."

Textbooks for students and manuals for inspectors and auditors also provide abundant evidence of widespread distortion at the enterprise and departmental level, and of the concern among the various controlling authorities with this fact.[12]

[11] M. Kh. Zhebrak, *Kurs promyshlennogo ucheta* [Course in Industrial Accounting], Moscow, 1950, p. 242. The last sentence of the quotation is, of course, to be understood in the hortatory rather than the positive sense. The source proceeds to list ways in which finished output may be recorded inaccurately, e.g. by the inclusion of items before their acceptance by the technical inspectors.

[12] I. Ia. German, *Finansovyi kontrol' i dokumental'naia reviziia v mestnoi promyshlennosti RSFSR* [Financial Control and Documents Audit in Local Industry of the RSFSR], Moscow, 1948; A. Kh. Ermolaev and G. R. Nak, *Dokumental'naia reviziia na zheleznodorozhnom transporte* [Documents Audit on Railroads], 2nd ed., Moscow, 1950; D. I. Alenchikov, *Organizatsiia i tekhnika dokumental'noi revizii* [Organization and Methods of Documents Audit], 4th ed., Moscow, 1954; N. A. Sokolov, *Kompleksnye dokumental'nye revizii na zheleznodorozhnom transporte* [Comprehensive Documents Audits on Railroads], Moscow, 1955; and W. Kalkutin and W. Mitrofanow, *Revision und*

The leaders of the Party are not only aware of the imperfect reliability of the statistical data on which their day-to-day decisions must be based, but even see fit at times to speak out on the subject. From their point of view, the situation is doubly serious, in that individual Party members, far from being invariably the alert guardians of legality and morality, themselves commit acts of distortion and deceit.[13] At one time the Party Central Committee issued a demand to all subordinate units to uncover instances of writing up and to turn the culprits over for criminal prosecution; yet, the Party's "house organ" complained, the order was ignored "in some places."[14]

In sum, one can infer from the specialized literature on statistics that deception in reporting has been widespread, and that the authorities have been well aware of this fact and have been seriously concerned about it; although of course we are not told the over-all magnitude, or even the preponderant direction, of distortion. The plaintive and sometimes near-alarmist tone of the Soviet literature on the subject of data reliability need not, however, mean that the degree of inaccuracy in Soviet output statistics is very high from the standpoint of the student of the Soviet economy. We must remember that the tolerances of inaccuracy acceptable for planning and administering the Soviet command economy, which is the chief end of Soviet statistics, may be considerably more exacting than those with which outside observers are typically satisfied, and moreover that the Soviets are wont to overdraw any evil that they may be mounting a domestic "campaign" against.

Errors; Mechanization

Clerical errors may have been relatively frequent in the Soviet Union compared to other industrial economies. Not only are Soviet clerks as much prey to human failing as any others, but their low educational background, especially in the earlier years of the Plan era, their poor pay, rapid turnover, and primitive bookkeeping and calculating equipment—all suggest this impression. It is also likely that the dubious piece-work system of pay for statistical clerks that was in operation during the mid-thirties led to inaccuracy.[15] Still,

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Kontrolle der wirtschaftlichen Tätigkeit der Industriebetriebe (translated from the Russian), Berlin, 1955.

[13] See *P.Zh.*, 1955, No. 11, pp. 28-30. Cf. *New York Times*, June 26, 1955.

[14] *P.Zh.*, 1955, No. 11, p. 29.

[15] Cf. *Plan*, 1935, No. 1, p. 56; 1936, No. 3, pp. 36-39, No. 8, p. 57, and No. 12, p. 60; 1937, No. 1 p. 41.

since the recording and reporting of output occupies such a crucial place in the life of the Soviet enterprise and since industry as a whole is a privileged sector of the economy, it is a fair guess that statistics of industrial output suffer less from neglect and error than do other areas of Soviet statistics.[16]

For a country in which the official ideology extols orderly and complete record-keeping and in which the imperatives of planning and of day-to-day administration of a command economy require detailed and prompt information, the degree of mechanization of statistical work and accounting in the USSR has been extremely low. For instance, as late as 1953, only some 3 to 4 per cent of the 2.3 million then employed in "record-keeping and computation" (no doubt including accounting and statistical data handling) used electric calculating machines, while "the overwhelming bulk of these employees still perform laborious recording and computations . . . by hand, that is, without the benefit of any mechanical equipment."[17] Work by hand in this case presumably does not exclude use of the traditional Russian abacus which, although a slower device than its Chinese or Japanese cousins, not to mention modern accounting and calculating machines, is nonetheless a helpful and reliable aid to computation. It may be true, as Campbell argues,[18] that greater investment in accounting machines would have yielded a high return on the additional capital thus invested, but it is also easy to understand why the mechanization of office work was for so long, and largely still is, neglected. We only need think of the structure of priorities that has guided Soviet planners; the abundant supply of poorly paid, semiskilled, and almost exclusively female, clerical labor; and the virtual lack of institutionalized incentive for the individual enterprise to raise the productivity of, and to reduce the expenditure on, clerical workers. The brief remarks on mechanization that follow are based largely on Campbell's useful study.

The Soviets made a very late start in mechanizing their accounting and statistical work, and before the war proceeded very slowly.

[16] This may not be saying much. For instance, see Uranov's description from personal experience of the incredible neglect of accounting and record-keeping in some rural cooperatives before the war (Peter Uranov, "Consumer Cooperatives in the Soviet Union," mimeographed in Russian, Research Program on the USSR, 1954, pp. 135ff.). However, for the reasons stated, such a picture is perhaps not typical of industrial enterprises, except possibly the smallest.

[17] *P.Kh.*, 1953, No. 4, p. 94.

[18] R. W. Campbell, "The Mechanization of Accounting in the Soviet Union," *The American Slavic and East European Review*, February 1958, p. 80.

The only mechanical device in widespread use at that time was the so-called arithmometer, a small, hand-operated, lever-set calculator of low speed that was invented in Russia as early as 1874. Import of accounting and calculating machines, mostly from the United States and Germany, was limited. Domestic production, which continued before the war to concentrate on arithmometers, was also very small compared to the potential demand. Both production and imports of punched card machinery were still insignificant. Campbell points out that "in 1937, for instance, the United States produced for domestic use 172,789 units of calculating, adding, adding-listing, bookkeeping, and billing machinery, whereas the Russians *planned* to produce 5,500 comparable machines and 64,000 arithmometers."[19] Moreover, the quality of domestically produced machines was extremely low, and spare parts and repair services were very hard to obtain. Campbell writes that "in terms of stocks, which is the magnitude we are most interested in, the lag behind the U.S. was even greater than in production," and proceeds to estimate that, at the end of 1940, the stock was not over "35,000 of all kinds [of such machines] except arithmometers, the stock of which might then have been somewhere above 300,000, depending on how rapidly the old ones were discarded."[20]

During the war, due to lack of production, looting, war damage, normal wear and tear, and the absence of spare parts and repair facilities, the gains in mechanization that were made during the thirties were virtually wiped out. However, since the war the Soviets have made a much more serious effort to mechanize accounting and computation than before the war. In this they were considerably assisted by the removal of dismantled German plants to the Soviet Union and by the operation of some plants as "Soviet corporations" in Eastern Germany. The official index, of unknown reliability, claims a nearly twentyfold increase in the domestic production of computing machines between 1948 and 1955; but while the output in the former year in absolute terms is unknown, it must have still been very small, and the significance of this increase is difficult to appraise. It has also been claimed that the *stock* of such machines grew sixfold between 1949 and 1955,[21] although again obviously

[19] *Ibid.*, p. 63. My emphasis.

[20] *Ibid.*, pp. 65f.

[21] *Vestnik mashinostroeniia*, 1958, No. 8, p. 62. By 1957 the increase was sevenfold (V.S., 1958, No. 7, p. 83). Imports of calculating machines, almost entirely from Eastern Germany, have been as follows in recent years: 1955—4.9 thousand units worth $2.5 million (at 4 "foreign trade rubles" to the dollar); 1956—6.7 thousand, $3.3 million; 1957—9.2 thousand, $3.5 million

from a very small base. The number of so-called machine accounting stations, which are complexes of punched card machinery, is said to have increased 6.3 times over the same period,[22] and thus may have reached about one thousand by the end of 1955.[23] Since then the stock of computing and calculating machines, including the punched card variety, has undoubtedly continued to grow, and the decision to establish a machine accounting station in each of the economic regions created in 1957 probably gave a new push in that direction. As to *electronic* computing machines for office work, all indications show that at the time of this writing there are still hardly any. In brief, although the evidence is very meager, Campbell is able to conclude (and one must agree with him) that while "the postwar efforts of the Russians indicate a great advance over their prewar achievements, the degree of accounting mechanization achieved in the Soviet Union thus far is insignificant in comparison to that in the United States."[24] This fact, he believes, greatly reduces the fineness of detail of which Soviet accounting is capable (although so far as *statistical reporting* is concerned there seems to be an overdose of detail), and also slows down the flow of reports. How much the inadequate mechanization affects the *accuracy* of statistical reports, and especially of industrial output data, is more difficult to deduce. Nor is it clear to what extent the increased machine-processing of data by the local statistical agencies in the economic regions that is now being introduced will improve the quality (i.e. accuracy) of Soviet output statistics.

In any case, the serious problems of the reliability of industrial production statistics in physical terms do not seem to stem primarily from clerical errors. On the one hand, by their very nature, errors tend to offset one another, that is, do not lead to any discernible bias, and, on the other hand, the importance, to the fortunes of the Soviet industrial enterprise, of meeting physical production targets ensures that special attention is paid to output figures. Thus, reliability of industrial production data is likely to suffer less from errors than from the less "innocent" forms of distortion, to which I now turn.

(*Vneshniaia torgovlia SSSR za 1956 god* [Foreign Trade of the USSR, 1956], Moscow, 1958, p. 26 and *Vneshniaia torgovlia SSSR za 1957 god*, Moscow, 1958, p. 26).

[22] *Vestnik mashinostroeniia*, 1958, No. 8, p. 62.

[23] Cf. Campbell, *op.cit.*, p. 70.

[24] *Ibid.*, pp. 70f. According to a recent evaluation by a high *TsSU* official: "The degree of mechanization of statistical work, and especially of primary record-keeping, lags far behind the requirements of the economy" (*V.S.*, 1958, No. 7, p. 84).

CHAPTER 5

Reporting at the Enterprise Level

As we have seen, the Soviet enterprise is both the producer of industrial goods and the originator of the statistical information on their output. This information simultaneously provides the basis for national statistics of industrial output, indicates the degree of fulfillment of past plans, serves as evidence of the quality of performance of the producer (be it the enterprise as a whole or the individual worker), and throws light on the functioning of the enterprise (or its personnel) in its capacity as the guardian and trustee of state property. In other words, what, from the over-all economic and administrative standpoints, constitutes a centripetal flow of information that is vital to the continuous planning and central management of the command economy, appears, to those directly involved in production, as a process of self-rating by subordinates before their administrative superiors. Moreover, the rewards for good performance are high; the penalties for poor performance are often severe. It is therefore hardly surprising that the most significant distortion of output data—disregarding, for the present, distortion at publication—apparently takes place at the level of the producing enterprise.

Since the enterprise reports by entering figures in the appropriate spaces of minutely prescribed forms, this distortion may be assumed to be virtually entirely of the numerical rather than the descriptive variety. (For the same reason, all distortion within the routine channels of data flow, all the way to the peak within *TsSU*, may be regarded as chiefly numerical. Descriptive distortion becomes significant only where there is considerable latitude in the mode of data presentation, e.g. in the sporadic publication of statistics.) It must be noted at the outset that numerical distortion may be in either direction. Insofar as the information reported to higher levels (either above the enterprise or still within it) determines the rewards and punishments dispensed to the managerial and operating personnel *as producers*—that is to say, as fulfillers of quantitative production targets, there is a strong incentive to embellish the situation by "writing up" production data. This is what Berliner, in his admirable study of Soviet managerial behavior, calls "simulation

[of plan fulfillment] by falsification of reporting"[1] and what Tsonev, in his paper on Soviet statistics, calls "reverse falsification" (*vstrechnaia fal'sifikatsiia*) by analogy with "reverse planning" (i.e. planning from below).[2] But at times the greater gain for the personnel of the enterprise may lie outside official channels, for example in pilferage or illicit sale of the product. In such cases the rational course of action may be to understate output in the statistical and accounting reports, so as to conceal the diversion of some of the product into unauthorized channels. Both tendencies, toward write-ups and write-downs, are well known to the regime.

The effective limits to distortion are set by the personal risks entailed by it, or the activity that prompts it (such as pilferage), for the one who distorts statistical data. However, the intensity of the incentives to distort and the risks incurred thereby may vary from one branch of industry to another. They may also vary over time, so that the actual degree of distortion of output statistics in any given branch, and even its very direction, may fluctuate over the years.

Because the motives behind write-ups and write-downs, their "technical" sides, and their limits are largely distinct, they are discussed in separate sections of this chapter, with special attention in each instance to (1) motives and (2) methods or techniques involved in distorting output data. The last section discusses the limits to distortion in the enterprise.

Write-Ups by the Worker[3]

The prevalence of incentive pay in Soviet industry is well known. The percentage of working time or workers in *large-scale* industry paid on a piece-rate basis exceeded one half of the total as early as 1928, and has risen since then as the following tabulation shows:[4]

[1] Joseph S. Berliner, *Factory and Manager in the USSR*, Cambridge, Mass., 1957, Chapter x.

[2] V. Tsonev, "Falsification of Soviet Industrial Statistics" (unpublished manuscript for Research Program on the USSR), New York, 1953, p. 7.

[3] By "worker" I mean anyone who both produces and reports output *to* the management of the enterprise; the term therefore subsumes foremen and other junior supervisory personnel.

[4] Figures for 1928-1935 refer to man-hours worked over the years in question; those for 1936-1955 to the number of workers in that year (for 1936-1938—at or near the end of the year). The figures for 1940 and 1955 pertain to *all* industry.

Sources: 1928-1935—*Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1936, p. 526; 1936-1938, 1940—E. L. Manevich, *Zarabotnaia plata i ee formy v promyshlennosti SSSR* [Wages and Their

1928	57.5	1935	69.8	1940	75
1929	58.8	1936	76.1	1955	77
1930	56.7	1937	74.9		
1931	58.7	1938	74.6		
1932	63.7				

It may be assumed that the percentages are even higher for those workers who have any output to report, i.e. those engaged in direct production as opposed to those performing auxiliary operations (janitors, guards, quality inspectors, etc.), the latter typically being paid on a time basis. In the later thirties, over 40 per cent of piece-rate workers were on "progressive piece rates,"[5] frequently with sharply graduated rates for above-norm output.

Apparently some of the most sharply graduated piece rates are found in the coal mining industry, where nearly half of *all* workers were on progressive piece rates before the war[6] (and probably still are). Here, certain "leading" underground jobs were paid as follows: 80 to 100 per cent fulfillment of the basic work norm—double the base piece rate, everything over 100 per cent fulfillment—triple the base piece rate.[7]

Some piece-rate workers also receive premiums for above-norm performance in respects other than sheer quantity of output. Thus, they may directly benefit from the economical use of raw materials, power, fuel, equipment, and other inputs, or from meeting and surpassing certain minimum quality requisites of output. Input economy is typically expressed as the difference between the norm of input per unit of output and the actual ratio achieved by the worker. It is clear that, *ceteris paribus*, the higher the output that is credited to the worker, the better his apparent record of input utilization.[8]

To summarize, the Soviet industrial worker may have the following motives for writing up his actual output or for exaggerating its quality:

1. To earn more on a piece-rate basis, and especially on the progressive piece-rate basis.
2. To earn higher premiums for economizing on the use of one or more inputs.

Forms in USSR Industry], Moscow, 1951, pp. 80, 82; 1955—*V.E.*, 1955, No. 8, p. 7.

[5] Manevich, *op.cit.*, p. 82.

[6] *Ibid.*

[7] *Ibid.*, p. 143; A. A. Zvorykin *et al.*, *Ekonomika ugol'noi promyshlennosti* SSSR [Economics of the USSR Coal Industry], 2nd ed., Moscow, 1954, p. 180.

[8] Manevich, *op.cit.*, pp. 153-160.

3. To receive a share of the saving in money unit cost of production, as may be provided in certain cases.

4. To earn premiums for quality of production.

5. To be eligible for higher rations when these are tied to performance, as during periods of consumer rationing or in corrective labor camps.

6. To receive the material or intangible benefits that are accorded to the "better" workers, such as housing, vacations, honorable mention, etc.

7. To justify a higher than necessary allocation of inputs for his use in order to dispose of them illicitly and to his personal profit.

The writing up of the physical output of individual workers, or of teams of workers, in order to raise their earnings seems to be widespread in the Soviet economy, including the industrial sector.[9] The relevant question here, however, is not how widespread such write-ups are, or how large they are on the whole, but to what extent they affect the industrial firm's accounting (and therefore reporting) of *finished output.* It would seem that in the latter respect the significance of write-ups by (and for) workers is perhaps smaller than their ubiquity might indicate for two reasons:

1. The recording of finished output is usually a more complicated operation, involving quality inspection (*OTK*) and formal acceptance by the warehouse, than the recording of the output of intermediate components and parts, not to mention the recording of operations which leave little if any measurable evidence of the product.

2. Much of the writing up of workers' output is done with the connivance (and often cooperation) of the supervisory personnel which, however, for its own protection, tends to channel such write-ups toward jobs that leave little or no tangible evidence of the actual amount of work performed by the worker.[10] These are, of

[9] Cf. Berliner, *op.cit.*, pp. 172-174. There is also considerable evidence of the prevalence of this practice—*tufta* in Russian slang—in the forced labor camps, although the especially harsh conditions may make it more of a necessity there. See, for example, the vivid description in Susanne Leonhard (*Gestohlenes Leben*, Frankfurt, 1956, pp. 613-615), who quotes the prisoners' philosophy: "with *blat* [illicit deals, "pull"] and *tufta* one can take it for ten years."

[10] Berliner, *op.cit.*, pp. 173-174. For similar reasons, the construction industry may be the worst offender in the Soviet economy when it comes to the exaggeration of volume of finished output on the basis of write-ups by (and for) individual workers. Here, jobs are frequently unstandardized, checking the

course, generally auxiliary and intermediate jobs, rather than the production of finished output.

Write-ups by the worker are hardest to effect in continuous flow production, and therefore they are significant in job lot or batch production. This is recognized in a Soviet book on auditing.[11] In lot or batch production the foreman, who attests the work performed by signing the work order, is frequently no less interested in exaggerating output than the worker himself. Some sources consider the storekeeper, to whom the completed semifinished or finished items are turned over, to be a significant obstacle to write-ups by workers because he is financially responsible for the inventory under his jurisdiction. Thus the same textbook on auditing states: "The output indicated in the work order may be regarded to be unquestionably valid when it is entered by a financially responsible person in the intermediate storeroom or warehouse where such parts are accepted by tale, weight, or measure." And adds: "However, production conditions do not permit such intermediate storerooms to be organized everywhere."[12]

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the amount of work done by the individual worker is often difficult after the fact, and the total volume of output by the construction enterprise is apparently often arrived at by merely summing the individual workers' contribution. For instance, an audit of work orders in construction organizations conducted in Moscow in 1951 revealed overpayment of wages on the basis of write-ups of 25 per cent on the average (*V.E.*, 1955, No. 8, p. 53). An audit by physical measurement conducted in the Bashkir ASSR in 1955 found that the volume of reported construction work had been exaggerated by over 25 per cent (*ibid.*). Similarly, it was found in 1952-1953 that the mechanized equipment pools of the Ministry of Construction had been writing up the volume of excavation work by as much as 30 to 40 per cent. "By 1954 [these] write-ups had diminished sharply, but were far from eliminated" (*Finansy SSSR*, 1955, No. 7, p. 47). Write-ups of construction work of 19 per cent are reported in another case (*P.Zh.*, 1955, No. 11, p. 28).

These practices continue. Writing in *Finansy SSSR* (1957, No. 7, pp. 35-37), the head of the Kirgiz branch of the *Prombank* (i.e. the Industrial Bank, which is charged with financing and supervising investment in industry and related branches of the economy) complains that physical audits within his jurisdiction have revealed numerous cases of writing up in construction, in one instance to the extent of 41 per cent of the claimed amount of work; that the agencies of the Procuracy, though charged with initiating formal prosecution against guilty parties when evidence of write-up is presented to them by the Bank, have hardly ever "in our experience" in the Kirgiz SSSR done so; and that consequently "in 1956, the number of instances of write-up not only did not diminish in comparison with 1955, but actually increased."

[11] D. I. Alenchikov, *Organizatsiia i tekhnika dokumental'noi revizii* [Organization and Method of Documents Audit], 4th ed., Moscow, 1954, pp. 129f.

[12] *Ibid.*, p. 130.

A recent article discussing a specific case in the tractor industry suggested that the recording of parts production can be rendered accurate by turning this function over to the intermediate storeroom as well as to the shop at the next stage of production.[13] Similarly, a prewar article on related problems in the machine-building industry urged the establishment of records at intermediate points in the production process (*pooperativnyi uchet*) in order to minimize write-ups and other abuses, which were conceded to be prevalent at the time.[14] None of the sources just mentioned is concerned with the recording of *finished* output. Moreover, we shall see later in this chapter that the storekeepers do not represent an insuperable barrier to write-ups.

In general, write-ups by workers (and by management) seem to be greatly facilitated by the primitiveness of measuring, counting, and weighing devices. Tsonev recounts from his experience a striking example of primitive recording in the coal mining industry, rendered grotesque by the fact that the clerk was paid a piece rate for the amount of coal recorded.[15] He also reports instances of intentional sabotage of automatic measuring devices,[16] a phenomenon that finds corroboration in the Soviet press.[17]

Write-Ups by Management

The problems and operating principles of Soviet management have been carefully studied by Western economists;[18] little purpose would be served in reproducing their findings here. Suffice it to mention that they generally agree, diverging only in detail and emphasis, that, in view of the structure of incentives, the behavior of Soviet management is directed toward the fulfillment and overfulfillment of the output goal, and, to a smaller extent, toward successful performance according to a series of other quantitative and qualitative indicators. The enterprise's output goal for a given period is usually a value figure, which in turn is the sum of the prod-

[13] *Avtomobil'naia i traktornaia promyshlennost'*, 1955, No. 7, p. 1.
[14] *P.Kh.*, 1939, No. 12, pp. 124f.
[15] Tsonev, *op.cit.*, pp. 102f.
[16] *Ibid.*, pp. 106f.
[17] Cf. *Z.I.*, May 14, 1937, p. 3; this example pertains to the Rostov Agricultural Machinery Plant, one of the "leading" industrial enterprises in the country. See also Berliner, *op.cit.*, p. 139.
[18] See, especially, Berliner (*op.cit.*); Gregory Bienstock *et al.*, *Management in Russian Industry and Agriculture* (Ithaca, 1948); and David Granick, *Management of the Industrial Firm in the USSR* (New York, 1954).

ucts of physical output quotas and fixed prices. But the physical output targets may be major goals in themselves, too.

The fulfillment and overfulfillment of production plans bring very large money premiums and other important benefits, material and intangible, to the successful management.[19] Clearly these rewards can be reaped (and failure avoided) by simulated as well as by actual success. Both the physical output record and the unit price may of course be manipulated or falsified to give the appearance of plan fulfillment or overfulfillment.[20] The reported physical output figures occupy a crucial position in management's thinking, not only for the reasons just cited, but also because they affect success in terms of a number of other indicators. The higher the reported physical output figures, the better the management's record looks on the following counts, all or nearly all of which may determine the material and intangible benefits for the executive personnel of the firm: (1) attainment and overfulfillment of the production plan; (2) attainment of the assortment plan; (3) unit money cost of production; (4) utilization of inputs (labor, materials, fuel, equipment, etc.) per unit of output; and possibly (5) realization of profits, total and per unit of output.[21] In addition, the higher the reported output, the easier it is for management to: (6) obtain the allocation of rationed materials; (7) obtain cash for wage payment; (8) obtain bank credit; (9) conceal sales of output at above-legal prices; (10) conceal diversion of inputs to illicit uses; (11) conceal overpayment of wages and overexpenditure on other inputs; and (12) avoid the unwelcome attention that unsatisfactory performance on points (1) through (5) above might invite.

[19] On the importance of these benefits, and especially on the size of the premiums, see Berliner, *op.cit.*, Chapter III.

[20] Intentional raising of the so-called constant prices at which the reported output is valued may, in some respects, provide even greater opportunities for management to present the appearance of success. Unlike the exaggeration of physical output, the raising of the so-called constant prices is not subject to most of the checks discussed in this chapter, and its benefits last beyond the given accounting period. An instance of such price manipulation is reported in V.S., 1951, No. 5, p. 59. Apparently a favorite device of raising the so-called constant prices is to pretend that a new product has replaced an old one (cf. A. Nove, "'1926/27' and All That," *Soviet Studies*, October 1957, p. 121). Other advantages that accrue to the enterprise from reclassifying an old product as a new one are discussed in Berliner, *op.cit.*, p. 158.

[21] On the last point, it would appear at first glance that the realization of higher profits depends on actual and not simulated increases in output, but thanks to the ingenuity of Soviet accountants and the sellers' market, this is not necessarily so. See, for instance, the reference to higher profits due to write-ups in *Finansy SSSR*, 1955, No. 7, p. 47.

The incentive for management to write up output in its periodic reports must, therefore, be very strong, and that management does so respond, though to varying degrees and in diverse ways, cannot be doubted by anyone familiar with the relevant literature. We have already noted in the preceding chapter that the frequent references to write-ups in the speeches and articles of the statistical authorities, the exhortations from above to be honest and to abide by "principles," the periodic announcement of penalties for distortion of reported data, and so forth. A great amount of anecdotal material on write-ups and similar acts of deception is scattered through the Soviet press; it is extensively supplemented by the eyewitness accounts of former residents of the USSR.[22]

There are many ways in which the physical output of a given enterprise in a given period of time may be overstated, but not all of them are of equal significance for our purpose. It will be recalled that by Soviet definition "finished output" is supposed to meet certain specific quality standards, to be accepted by quality inspectors (*OTK*), and to be turned over to the warehouse by midnight of the last day of the period. The *OTK* inspectors are also frequently called upon to determine the quality grade of the product. Such rigor in statistical definition of finished output is, of course, necessitated by, among other reasons, the system of planning and the existence of a command economy, and especially the dispensation of rewards and punishments for plan fulfillment. Rigor in quality specifications laid down by the central authorities is also necessary because some of the forces that tend to maintain or even raise quality standards in other economies—competition among sellers or the "countervailing power" of the buyers—are typically of little consequence in the Soviet sellers' market. (By this I do not mean to imply that maintenance of quality standards, in the broadest sense of the phrase, is not a problem in market economies. As we well know, it is. Nor do I mean to suggest that some of the permissive causes of poor quality of goods in market economies—such as consumer ignorance—do not operate in command economies. They do.)

In his able survey and analysis of "simulation" of plan fulfillment by Soviet management, Berliner distinguishes between deviation from the assortment plan, deterioration of quality of output, and falsification of reports (which approximately is what I have called

[22] Such eyewitness accounts can be found in Tsonev, *op.cit.*, *passim*, and Berliner, *op.cit.*, Chapters VIII-X.

"numerical distortion").[23] It is with numerical distortion that I shall be concerned in the remainder of this section, postponing the discussion of the quality of reported output and of the composition of heterogeneous commodities for the next section of this chapter. Two qualifications should be noted at this point, however. First, while deviation from the assortment plan may be of great importance for the operation of the Soviet economy, for our purpose it is not important as long as the various commodities of the assortment are planned and accurately reported as separate commodities. Thus if an enterprise is ordered to produce in a given period x trucks and y passenger cars, but in fact produces $x + v$ and $y - w$ units, respectively, and so reports its output, no statistical distortion *need* be involved. On the other hand, if the enterprise reports the output of a commodity that is recognized as a single item in its plan, but which in fact is heterogeneous, as most commodities are, the question of assortment *within* this commodity category becomes significant for our purpose. This question will be taken up in the next section. Secondly, considerations of quality cannot be dismissed even in a discussion of "straight" numerical distortion, because there is a point in the definition of finished output at which "quality becomes quantity." That is to say, if the quality of an article fails to meet certain minimum commonly accepted or officially laid down specifications, that article should not be included as part of finished output. Its inclusion may be fairly regarded as a case of numerical distortion. At the same time, as we shall see, the production and outshipment of substandard or defective products—the so-called *brak*—is an ever-present and serious problem in Soviet industry.

Turning to numerical distortion as such, as to be expected, the techniques that leave little or no lasting record of illegal action are among the most favored. These techniques are primarily (1) "borrowing" output from the first few hours or days of the next period and reporting it as the given period's production, and (2) exaggerating the value of goods in process, where changes in the inventory of such goods enter into "gross value of output." The latter device, however, does not seem to affect Soviet statistics of physical output, since it pertains to intermediate stages of production rather than to finished products, and to value rather than physical magnitude.[24]

[23] Berliner, *op.cit.*, Chapters VIII-X. Although Berliner's data refer primarily to the thirties, there seems to have been little fundamental change in this regard (cf. *P.Kh.*, 1956, No. 1, p. 65).

[24] A commonly employed method of quickly and painlessly increasing the

Though the practice is undoubtedly extremely widespread,[25] it is difficult to say whether "borrowing" from the future appreciably affects Soviet physical output statistics for a significant number of commodities, even for individual years. Some of the complaints in the literature on this score involve (at least for our purposes, if not from the standpoint of the harassed manager) rather trivial dipping into the future, for instance, to the extent of one shift.[26] Other cases reported are less trivial, though perhaps not very typical, as the case of a Moscow plant which "borrowed" five to ten days each month, for example.[27] This looks like an instance of not being able to get out of "debt," and in the months for which the "indebtedness" changes very little, there is also very little effect on the reliability of the reported statistics. Extreme individual instances apart, there would seem to be a limit to the inflation of this type of "debt." I am, therefore, inclined to conclude that the "borrowing" technique is more important as a means of smoothing out, in a minor way, the apparent time curve of industrial output rather than as a way of distorting the larger and longer-run output picture.

More serious distortion of output statistics may be provided by a variant of the "borrowing" technique found in machine-building, namely, the inclusion of items whose assembly is to be completed after the end of the given period.[28] Judging by the number of complaints in the Soviet press, such items are frequently never completely assembled before shipment to the buyer. This practice can, of course, also be regarded as cheating on the quality of output, or the shipping out of *brak*.

Of greater interest to us are those distortions that constitute a *net* write-up, rather than a mere redistribution of the output pattern over time. Berliner's informants tended to belittle the incidence of sheer invention of production figures by management as being too risky. Yet one comes across such cases from time to time in the Soviet press: e.g. in oil extraction,[29] timber cutting and hauling (where the reported figure was triple the actual one),[30] and coal

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value of output before the books for the period are closed is to shift materials from the storeroom to the production floor. This immediately transforms them into "goods in process," and thus augments the enterprise's "gross value of output" for the period.

[25] Cf. Berliner, *op.cit.*, pp. 161ff.

[26] V.S., 1956, No. 1, p. 60.

[27] Alenchikov, *op.cit.*, p. 49.

[28] V.S., 1951, No. 5, p. 59.

[29] Alenchikov, *op.cit.*, p. 50.

[30] V.S., 1955, No. 6, p. 11.

mining.[31] That such sheer invention is a significant problem is also hinted at in the statements of the statistical authorities.[32]

A safer and clearly very widespread method of writing up output is the inclusion of *brak* in the reported amount of finished product. Direct references in the Soviet press, eyewitness testimony, and the continual complaints about the substandard quality of industrial products bear such ample and conclusive evidence of the prevalence of this practice in Soviet industry, despite severe criminal and administrative sanctions against it, that it is not necessary to dwell on it further at this point.[33] The general problem of quality is taken up in the next section, while in the last section of this chapter, I shall discuss how the enterprise can "get away with" reporting and shipping out *brak*. (I assume that any *brak* shipped out to the customer was naturally also recorded and reported as finished output.) However, there seems to be a loophole for the producer in reporting *brak* as finished output, which is worth mentioning at this point. *Brak* that has been discovered as such and returned by the buyer to the producer need not be deducted from the producer's recorded (and reported) output unless discovered before the end of the accounting year during which it was produced.[34] Considering the typical bunching of shipments toward the end of the accounting year and the "red tape" that prevails in interfirm relations, this loophole may be of appreciable practical significance.

There are, of course, other methods of writing up output (e.g. the presentation of old inventory as newly produced goods[35]) which

[31] *Z.I.*, June 1, 1936.

[32] E.g. the editorial in *Vestnik statistiki* which complains of inclusion "in plan fulfillment reports of output that has not been actually produced" (1952, No. 4, p. 13).

[33] Cf. Berliner, *op.cit.*, Chapter IX, where the problem of *brak* receives careful attention.

[34] S. A. Shchenkov, *Otchetnost' promyshlennykh predpriiatii* [Reporting by Industrial Enterprises], Moscow, 1952, p. 37.

[35] Cf. *Z.I.*, Nov. 16, 1936; a similar case is related from personal experience by Victor Kravchenko (*I Chose Freedom*, New York, 1952, p. 299).

A peculiar but apparently not unique case of writing up was recently reported in some detail by *Pravda* (April 8, 1959, p. 2). A creamery in Khodorov, Drogobych *oblast'*, colluded with a number of villages to purchase butter from them instead of milk, which was credited to the villages against their milk sales quotas. The butter was purchased by the village authorities in the stores of nearby towns, and in turn was presented as its own output by the creamery. To this extent the butter, of course, entered Soviet production statistics twice. In the preceding year, according to the article, the director of the creamery bought the butter himself in order to fulfill his milk purchasing quota, entering it on the books as receipts of milk. The local (*raion*)

amount to a net exaggeration of production over time, and only a skilled Soviet practitioner of the art could compile a reasonably complete catalogue of such techniques.

Devaluation of the Physical Unit of Measure

Because its fortunes depend primarily on fulfilling and overfulfilling the production plan in physical terms, or in value terms derived directly from physical output, the management of the Soviet industrial enterprise is strongly motivated to stress sheer quantity of output at the expense of other considerations, such as quality. Cost targets and input-utilization norms have the same effect. The physical unit of measure in question here is, of course, the one that is specified in the enterprise's plan and in terms of which its performance is appraised by superior agencies. Let us call this unit the "*specified* physical unit of measure." Given the system of planning and the structure of rewards, the Soviet industrial enterprise has been discovered as such and returned by the buyer to the physical unit of the product. And since we may assume a high positive correlation between the effort by the producer and the utility of the product to the user (consumer), there is therefore a built-in tendency toward *devaluation* of the specified physical unit of measure, that is, a tendency for the specified physical unit to represent less use-value (intrinsic value, utility).[36] Naturally there

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Party authorities tried to cover up the fraud when its exposure was threatened, passing a resolution which categorically denied the existence of any machinations in the procurement of agricultural produce in the villages or at the creamery. *Pravda*, however, alleged that writing up is widely resorted to in the agricultural reports in the Khodorov *raion*, and hinted that the same may be going on in the other *raions* of the *oblast'*. On April 20, 1959, *Pravda* carried a brief follow-up notice which stated that the director of the creamery was reprimanded and discharged from the job, and the first secretary of the *raion* Party committee was relieved of his post (but not discharged from the Party). Nothing was said about any sanctions against the implicated village authorities. A rather similar case of purchase of butter by a creamery in order to meet its production plan, but this time with financial contributions toward the undertaking on the part of certain officials in the *raion*, was reported in *Krokodil*, 1959, No. 1, p. 7. It seems likely that these events are in some way connected with the "campaign" to surpass the United States in the per capita production of milk, butter, and meat, which was launched by Khrushchev in May 1957.

[36] By analogy with monetary economics, "depreciation" may be more apt than "devaluation," since what I have in mind here is not an official downward redefinition of the use-value of a physical unit of the commodity, but a spontaneous and possibly continuous process of attrition of value, like the external or internal depreciation of a currency. However, I forego the term "deprecia-

are limits to this. Soviet goods are generally not of "zero quality." The devaluation is checked or even reversed by other forces, such as fear of criminal or administrative sanctions, the impact of the customer's countervailing power, financial inducement (which may vary with the quality of the product), and the producer's pride of workmanship or his sense of responsibility to society. In this section we shall discuss the effect of this devaluation on the quality and intracommodity assortment of goods.

QUALITY

Deliberate deterioration of quality may be regarded as an alternative, and generally a safer and easier alternative, to write-ups among the Soviet manager's methods of simulating plan fulfillment. Indeed: "Deliberate deterioration of quality is a classic form of simulation."[37]

We have seen that the laying down of minimum quality standards from above is of particular importance in the Soviet economy because of the weakness or absence of some of those forces that tend to maintain or raise quality in a market economy. It is especially so in view of the built-in tendency to stress quantity at the expense of quality. Consequently, violation of quality standards or specifications is a serious criminal offense. The major prewar

tion" to avoid confusion with its other meaning within the context of an industrial enterprise. Still by analogy with monetary economics, devaluation of the physical unit of measure may also be thought of as an inflation in the quantity-to-use-value ratio. The analogy, incidentally, is not so far-fetched if we consider that the ruling behavioral principles in the Soviet economy and in a market economy are, respectively, maximization of output in physical terms and maximization of money profits. "Following the rules of the game," entrepreneurs in a market economy push for higher sales prices, thereby tending to depreciate the currency, while Soviet managers contribute to devaluation of the physical unit of measure and (it may be added) also to inflation of the so-called constant ruble prices, such as the notorious 1926/27 prices, in terms of which their plan fulfillment is evaluated.

[37] Berliner, *op.cit.*, p. 136. In view of this and of the high incidence of low-quality output in Soviet industrial practice, the following statement by Berliner is open to question: "Of the various courses of action open to the manager for simulating plan fulfillment, quality deterioration is fraught with the greatest danger. It is certainly not resorted to lightly, nor without considerable assurance that it can be gotten away with" (*ibid.*, p. 155). If what the author has in mind here, as appears from the context, is not any deterioration, but one that brings the quality level below acceptable standards, i.e. results in spoilage (*brak*), the statement is perhaps more defensible. But even so, the very frequent complaints that goods are substandard or incompletely assembled suggest that the decision is not as difficult to make for the Soviet manager as one might assume from the above statement.

legislative acts in this regard were a resolution of *SNK*, dated December 8, 1933, which provided for sentences of up to five years for producing goods of low quality or delivering incomplete products, and (this time on the highest legislative level) an edict of the Presidium of the USSR Supreme Soviet, dated July 10, 1940, which provided for sentences of five to eight years.[38] The latter asserted that "the output of industrial products that are of poor quality or incomplete or that violate compulsory standards is a crime against the state equivalent to wrecking." The provisions of the 1940 edict were interpreted by the USSR Supreme Court to apply to goods that had passed *OTK* and were ready for delivery to the customer, as well as to goods actually delivered,[39] in other words, to goods reportable as "finished output." However, except possibly immediately after their enactment, these criminal sanctions seem to have been quite unsuccessful in attaining their objectives. This much is clear from the ever-present complaints in the Soviet press, from the testimony of former eyewitnesses, and even from official admission. The official admission came in connection with the next legislative act, the resolution of the USSR Council of Ministers, dated September 23, 1952,[40] which stated that "executive officials of the ministries and departments struggle unsatisfactorily to improve the quality of output, as provided for in the edict . . . of 1940 . . . and connive with the violators of the edict" while "the Procuracy of the USSR . . . discharges unsatisfactorily its absolute obligation to enforce the edict. . . ." The resolution went on to specify a long list of administrative measures, including the strengthening of quality control departments (*OTK*), aimed at improving the situation, and charged the law enforcement agencies anew with enforcing the provisions of the 1940 edict. It is not clear whether there has been any substantial change in quality of output since 1952, but there is daily evidence in the Soviet press that the low quality of industrial products and the delivery of uncompleted (or incompletely assembled) articles remain very serious problems. It is hard to believe that a considerable portion of it is not deliberate, in the sense

[38] Kh. E. Bakhchisaraitsev, *Spravochnik po zakonodatel'stvu dlia rabotnikov gosudarstvennoi promyshlennosti SSSR* [Legal Manual for Personnel in State Industry in the USSR], Moscow, 1951, pp. 372ff. See also the discussion of these acts and of their enforcement (or lack of it) in Berliner, *op.cit.*, p. 153.

[39] Bakhchisaraitsev, *op.cit.*, 373 (paragraph 3).

[40] *Direktivy KPSS i Sovetskogo pravitel'stva po khoziaistvennym voprosam* [Directives of the Communist Party of the Soviet Union and of the Soviet Government on Economic Subjects], Vol. III, Moscow, 1958, pp. 642ff.

of being a conscious response to the incentive structure in the industrial enterprise.

Since deliberate quality deterioration is an alternative to write-ups as a method of simulating good performance, one may expect that as often as not the two vary inversely over the short run, one being practiced and the other eschewed according to the side from which "the heat is on" at the given moment. An event such as the enactment of the 1940 edict may, at least temporarily, shift the balance between the two. In the long run, however, the incidence of quality deterioration and of write-ups may well vary together, since both are responses to the same fundamental circumstances, i.e. the severity of the plans, the efficiency (or inefficiency) of the supply system, the structure of rewards for plan fulfillment, the harshness of the political atmosphere, and so forth.

INTRACOMMODITY ASSORTMENT

In addition to a specified unit of measure, every product possesses by its very nature other quantitative dimensions. For example, if the specified unit is a weight unit, the other quantitative dimensions may be size, count, area, rated capacity, and so forth. Thus, since the product may vary according to a number of physical criteria while being reported as a single commodity measured in terms of a single (specified) physical unit, we can speak of *intracommodity assortment*; this is not to be confused with *intercommodity* assortment, where the various commodities are explicitly specified in the enterprise's plan and which, of course, gives rise to the classic Soviet "problem of assortment."[41] Needless to say, there is no sharp line separating quality and intracommodity assortment, but the distinction may nonetheless be useful.[42]

But while there are strong over-all legal sanctions against low-quality output and less severe sanctions against the violation of *inter*commodity assortment plans, there seem to be none directed specifically against improper *intra*commodity assortment. By defini-

[41] See Berliner, *op.cit.*, Chapter VIII.

[42] See John P. Hardt, "Economics of the Soviet Electric Power Industry" (processed), Research Studies Institute, Air University, 1955, Chapter IV; and *idem*, "Soviet Capacity Will Not Provide for Industrial Load Growth by 1960," *Electrical Engineering*, November 1956. This is not to be confused with the fact that in the USSR electrical output is expressed gross of consumption by the power stations for their own uses, while in the U.S. it is expressed net of such consumption (see *V.S.*, 1958, No. 1, p. 85). For comparability, postwar Soviet figures should be reduced by about 6 per cent (see *Promyshlennost' SSSR* [The Industry of the USSR], Moscow, 1957, p. 21).

tion, intracommodity assortment is not specified in the enterprise's plan; hence, nonfulfillment of the plan is not involved, although noncompliance with contractual provisions may be and often is. And yet the problem is an important one for the operation of the Soviet economy as well as for the appraisal of Soviet statistics.

Even if we disregard time-utility and space-utility, it is very difficult to think of an industrial commodity that is entirely homogeneous, at least, short of such a fine breakdown of commodity nomenclature that would render it impracticable for planning and statistical purposes. At any rate, the enterprise usually has some choice, and often a great deal of choice, in intracommodity assortment while fulfilling the plan for the given product in terms of the specified physical unit of measure. It will obviously tend to select the assortment that will maximize "physical" output of the commodity, given the resources of the enterprise. If the specified unit of measure is changed by directive from above, as it may be in order to induce a change in assortment, the enterprise will tend to adjust the intracommodity assortment to maximize "physical" output under the new conditions. A striking illustration, no less instructive for possibly being apocryphal, is provided by Nove:[43]

"The classic example of this is a factory which makes nails. When the plan was established in *numbers*, only small nails were made; so the basis of the plan was changed to weight, and then there were only large nails. If the plan is expressed in money, then only those which are cheapest to make will be produced, and probably all of the same size; if each type of nail is to be separately specified in the plan, this would be a glaring case of bureaucratic over-centralization."

Many actual examples may be cited. Thus, the output of wool cloth being measured in linear meters, its width averages 106 cm, compared to a technical optimum of 142 cm.[44] The average width of

[43] A. Nove, "The Pace of Soviet Economic Development," *Lloyds Bank Review*, April 1956, p. 10. It must be noted that considerations other than fulfillment of the production plan also affect the management's decision with regard to assortment. For example, D. D. Kondrashev (*Tsenoobrazovanie v promyshlennosti SSSR* [Price Formation in USSR Industry], Moscow, 1956, pp. 136-138) assigns considerable importance to the relative profitability of products as a determinant of the assortment.

[44] *Sotsialisticheskii trud*, 1957, No. 1, p. 50, cited by A. Nove in "The Problem of 'Success Indicators' in Soviet Industry," *Economica*, February 1958, p. 7. Cf. Kontorovich in *P.E.G.*, Oct. 3, 1956. In 1959 the specified physical

linen cloth diminished in the past quarter century as follows: 1932—101.5 cm, 1940—96 cm, 1955—90.3 cm.[45] "A certain metal works increased its output of roofing iron in a five-year period by 20 per cent in tons, but by only 10 per cent in square meters; the plan, of course, was expressed in tons, and the enterprise reached its output target by an economically and technically unnecessary increase in weight."[46] The targets for finished steel, castings, and many kinds of machinery are usually set in tons; hence the well-known tendency for Soviet plants to produce unnecessarily heavy products of this sort.[47] At times this may be done within the limits of standard specifications by including the maximum permissible "positive tolerances" (*pliusovye dopuski*) in such finished steel products as beams, plate, and pipe. These practices in the steel and machine-building industries were the subject of a special lengthy resolution of the Council of Ministers, dated August 16, 1952,[48] and were also singled out by Bulganin in his report on industrial efficiency to the Party Central Committee in July 1955.[49] But even

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unit of measure for all textile fabrics was apparently changed from linear meters to square meters; *Pravda*, July 14, 1959, p. 2.

[45] A. M. Korneev, *Tekstil'naia promyshlennost' SSSR i puti ee razvitiia* [The USSR Textile Industry and Ways of Its Development], Moscow, 1957, p. 277.

[46] *Sotsialisticheskii trud*, 1957, No. 1, p. 50, as quoted by Nove in *Economica*, February 1958, p. 5. Similarly with regard to paper where the quest for tonnage leads to fewer, but heavier, units of area, and incidentally also to below-plan unit cost (*P.E.G.*, March 22, 1957, p. 3).

[47] For a discussion of this particular phenomenon, see M. A. Tseitlin, "O natural'nom izmerenii promyshlennoi produktsii" [On Measuring Industrial Output in Physical Terms] in *Nauchnye zapiski* [Scientific Notes] Leningrad, 1955, p. 49; and with regard to machinery in general, see *Finansy SSSR*, 1957, No. 6, p. 19. Specifically with respect to steel pipe, see the article by Petukhov in *P.E.G.*, July 13, 1956, p. 2; with regard to consumer hardware, see the article by Emdin in *P.E.G.*, Sept. 7, 1958, p. 3.

[48] *Direktivy KPSS*, Vol. III, pp. 634ff. On the problem of "positive tolerances" for building materials, see G. E. Paraubek, "Nekotorye voprosy kachestva stroitel'stva" [Some Questions of the Quality of Construction] in *Voprosy ekonomicheskoi effektivnosti novoi tekhniki v stroitel'stve* [Problems of the Economic Efficiency of New Construction Processes], Moscow, 1958, p. 375; with respect to finished steel products, the article by Barngol'ts in *P.E.G.*, June 27, 1956, p. 3.

[49] *Pravda*, July 17, 1955. The problem was brought up again at the XXI Party Congress (January-February 1959). A delegate from Moscow charged that "nearly all the rolled steel arriving at factories manufacturing reinforced concrete [construction] components has positive tolerances. Last year's laboratory tests showed that 83 per cent of the tested items of reinforcing steel had positive tolerances, which in the case of 50 per cent considerably exceeded even the maximal standards" (speech by V. I. Ustinov, *Pravda*, Jan. 29, 1959, p. 3). Another speaker, L. I. Brezhnev, noted similar complaints about rolled

if a seemingly more rational physical unit is specified for equipment, it may turn out perversely. Thus *Pravda* reported: "The output of heating furnaces is being incorrectly planned: the factories' plans are not in terms of number of furnaces with allowances for their heating capacity, thermal efficiency, and other characteristics, but in terms of [square] meters of heat-transfer surface. Therefore a bulky and ineffective furnace such as Universal-3 turns out to be more advantageous to produce than a compact modern furnace."[50]

Two other instances, however, may be cited at some length because they have received careful analysis in Soviet sources, in itself a rare occurrence. The first is a case study of the glass industry conducted by Tseitlin during his interesting inquiry into the logic of physical units of measure in the planning of industrial output.[51] At one time a variety of units was employed, but in the early thirties tonnage became the specified physical dimension in all branches of the glass industry (window glass, bottles, flasks, tumblers). It was chosen for easier production planning (i.e. the construction of input-output ratios, capacity utilization rates, etc.) since both the raw materials for glassmaking and the semifinished product, raw glass, were measured by weight. It was, so to say, material-oriented. But this led the plants to produce the thickest and heaviest sheet glass and glassware, thus greatly contributing to the acute shortage of glass and glassware generally at the time. (The production of thick window glass was also stimulated by technical difficulties in mastering the new continuous sheet glassmaking process.) Seen another way, the materials for glassmaking, especially alkali, which were also very scarce, were being used very ineffectively. The crisis finally led to a special resolution of *SNK*, dated April 2, 1934, which imposed utility-oriented rather than material-oriented units of measure: square meters for window glass, and number of pieces for glassware. Tseitlin does not say what happened after that, and whether only the thinnest window glass and the smallest and thinnest glassware has been produced since, or whether this has been avoided (as in Nove's nail example) by a finer breakdown of the nomenclature, with attendant risks of overcentralization.

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steel products in general, alluded to unspecified measures against the practice supposedly worked out by the Party and the government, and appealed to the steel industry to manufacture rolled steel products with negative tolerances so as to "save hundreds of thousands of tons of metal" (*Pravda*, Jan. 31, 1959, p. 9).

[50] *Pravda*, Sept. 5, 1958, p. 2.

[51] Tseitlin, *op.cit.*

It may be worth digressing to note that Tseitlin's thesis is that a single specified physical unit of measure is not desirable in most industries. Instead he would have concurrently a material-oriented unit, to facilitate production planning and materials allocation, and a utility-oriented unit, to ensure the production of usable goods. One of them, preferably the latter, would have priority as a success indicator for the enterprise. But his relatively flexible approach still leaves certain questions unanswered. For instance, if the conversion coefficient between the two units is not fixed (and if it is, one of the units is redundant), will the Soviet system of planning be able to cope with dual units? And, more important, how is it possible to ensure the right intracommodity assortment with a success indicator based chiefly on a single specified unit of measure, even if that unit is utility-oriented?

The second instance is a criticism of a proposal to change the specified physical unit in the tanning industry from an area unit to a weight unit, and is of particular interest because it came from the pen of the director of a tannery, a certain Mindin.[52] He noted that in 1930, in order to improve the quality and increase the quantity of output (presumably in terms of area!), the plans of tanneries had been changed from a weight basis to an area basis. In 1935 a few tanneries had reconverted for planning and statistical purposes to a weight basis, and at the time of his writing the whole industry had been directed to reconvert to a weight unit by 1936. This directive, in Mindin's view, was a retrograde step because it would induce tanneries to obtain the maximum number of *kilograms* of leather from a given amount of raw material. (He did not discuss whether it was rational to obtain the maximum number of *square meters* of leather from the supply of hides.) To explain how the tanneries would do this, Mindin presented, in considerable detail, nine ways of maximizing leather output in terms of weight, some of which are worth citing. Thus, the tanneries would not clean the hides well; they would let the hides soak up excessive amounts of chemicals and tanning extracts, and would not bother to rinse these out; and they would leave a high moisture content in the leather. Mindin wrote as though these practices would be virtual certainties if the unit of measure were changed, and implied that

[52] V. V. Mindin, "Za planirovanie i uchet vykhodov gotovoi produktsii po ploshchadi" [For Planning and Recording Finished Output in Terms of Area], *Kozhevenno-obuvnaia promyshlennost' SSSR*, 1936, No. 3, pp. 46f.

they would go into effect immediately after the change-over. It appears that the change-over did take place.

To conclude the discussion of intracommodity assortment, for our purpose the crucial events are: (1) the change-over in the specified physical unit of measure, and (2) the change in the scope of the commodity category, that is, its aggregation or disaggregation. As to (1), substitution of one specified physical unit of measure for another presumably tends to bring about a quick adjustment of intracommodity assortment on the part of the enterprises to correspond to the new situation. Now it does not matter here whether the new assortment is in some sense an improvement over the old. What matters is that a chained series that purports to represent the physical output of that commodity, spliced at t (the year of the change-over) will show a greater growth (smaller decline) than if the series were expressed either in the new or in the old unit throughout. The more numerous are such change-overs during the period in question, the greater presumably is the degree of exaggeration, except, of course, when restoration of a previous specified unit of measure permits direct physical comparison between early and late years in the output time series.

As to (2), an aggregation of the commodity category in the enterprise's plan probably gives additional scope for the management to manipulate intracommodity assortment to its advantage, and thus to devalue the physical unit of measure. Disaggregation works in the opposite direction. This must be borne in mind in connection with the fluctuations in the detail of planning. In recent years the tendency has been toward less detail in the central plan, and possibly also less detail in the plans of the enterprises, i.e. toward aggregation in commodity categories.

To recapitulate, other things being equal, devaluation of the physical unit of measure may occur in four ways: continuously, owing to the emphasis on quantity at the expense of quality and to the seeking out of more advantageous intracommodity assortment;[58] and discretely following change-overs in specified units of measure and aggregation of commodity categories. (Disaggregation of com-

[53] It *may be* that the steady increase in the average ash content of coal mined in the USSR—15.2 per cent in 1940, 17.1 in 1950, and 18.7 in 1957 (*P.E.G.*, Aug. 20, 1958, p. 2)—is a case in point. The authors who cite these figures and many other instances of the deterioration of the quality of coal and of relative shortages of better grades of coal, while poorer grades are in oversupply, argue that it is within the power of the coal industry to reverse these trends by paying greater attention to quality.

modity categories tends to have the opposite effect.) Of course, other things do not remain equal, and we cannot conclude from this analysis that the quality of Soviet industrial products has steadily deteriorated. On the contrary, there have undoubtedly been periods in Soviet history when the quality of industrial products was generally rising.

Underreporting; Write-Downs

While the tendency of Soviet enterprises to overreport output has been, on the whole, well known to students of the Soviet economy for some time, before the publication of Berliner's inquiry there seems to have been less appreciation of the tendency to *under*report physical output.[54]

Much of the underreporting is either a consequence or a by-product of widespread pilferage and theft of "socialist" property by workers and employees of industrial plants, or by outsiders. Indeed, petty crimes of this nature are so often mentioned or alluded to in the Soviet literature and are so frequently related by former Soviet citizens that it is not necessary to give specific citations here.[55] Some of the stealing is done rather ingeniously; much apparently with the connivance or even active participation of the numerous guards.[56]

A priori, one would expect pilferage and theft to be a relatively higher percentage of total output where: (1) the goods are not too heavy or bulky to steal, smuggle out of the plant, carry away, and

[54] Berliner, *op.cit.*, pp. 164ff. Earlier recognition of the presence of underreporting appeared in Alexander Gerschenkron, "Reliability of Soviet Industrial and National Income Statistics," *The American Statistician*, April-May 1953, p. 18; and in Nove in *Lloyds Bank Review*, pp. 2f.

[55] Boris Konstantinovsky in *Soviet Law in Action—The Recollected Cases of a Soviet Lawyer* (Cambridge, Mass., 1953, p. 19) offers the following interesting observation: "Mass thefts in Soviet enterprises and the tolerant attitude of public workers to thieves of 'socialist' property are also explained by the fact that not only the Soviet state, but the Soviet worker, strictly distinguishes between state and personal property. People of unimpeachable honesty, with whom one could trust any kind of 'personal' property, busy themselves with the systematic theft of state goods—simply because a Soviet worker's pay is lower than the barest 'living' minimum."

[56] A former Soviet citizen has related to me from personal experience how large amounts of fish were smuggled out by the workers of a fish-curing plant with the tacit consent of the guards. Indeed, articles in law enforcement journals, such as *Sotsialisticheskaia zakonnost'*, suggest that the guards are often the first to be suspected in any investigation of theft, and with good cause.

store;[57] (2) the goods are such that they can be readily sold or exchanged on some sort of black or open market (e.g. consumer goods, small hardware, spare parts, etc.);[58] (3) average real wages are low compared to previous years, or are declining; (4) rationing obtains; (5) open or black market prices are high; and (6) enforcement is less strict.

Pilferage and theft by workers and employees (including managerial personnel) may or may not result in the underrecording and underreporting of output. Obviously, if the stealing takes place before the output is recorded, neither the enterprise's books nor its reports to higher authorities, nor for that matter the published statistics, will include the stolen portion of the product (unless, of course, there is a conscious attempt to correct the books accordingly, in which case the "technical" problems of recording and reporting are the same as with write-ups). If the stealing takes place after the output is initially recorded, the consequence is either an apparent inventory shortage or a conscious attempt by management to conceal inventory shortage by writing down output. In the event of such a write-down, again, the data available to the higher authorities, and therefore also the published statistics, will not include the stolen portion of the output—unless, of course, at some level above the enterprise a correction is made on this score.[59]

Apart from this, Soviet management may—and does—write down physical output for the following reasons: (1) to ensure a "safety factor" in future plan fulfillment; (2) to "play the rates" of the

[57] However, under favorable conditions even most bulky goods are apparently stolen by workers. In a *feuilleton* describing the tribulations of private citizens building their own homes, *Pravda* (July 2, 1958, p. 3) writes:

"Stone and cement [for private home construction] are supplied by people whose hearts are not of stone. These hearts beat fast at the sight of a bribe. Certain storekeepers at construction organizations easily trade scarce cement for altogether unscarce vodka; while dump trucks loaded with building stone willingly change their destinations, and, for a standard price of 80 rubles, unload on the private builders' lots." In these instances, no underreporting of cement output is presumably involved since the theft takes place not at the cement plant but at the storehouse of a construction organization. Whether the building stone comes directly from the quarry or not is not clear; if it does, possibly its output is correspondingly underrecorded.

[58] See the account by Konstantinovsky (*op.cit.*, pp. 18-22) of the pilferage problem faced by a large bread-baking establishment for which he was legal counsel. For a recent account of blatant pilferage by the whole staff of a meat-packing plant, from the director down to the guards, see the article by Krasnov in *Pravda*, July 10, 1959, p. 6.

[59] For such corrections at higher levels, see the discussion of milk production statistics at the end of the next chapter.

premiums scales; (3) to conceal illicit diversion of goods, and the embezzlement of funds that frequently accompanies it; (4) to conceal production for own use; and (5) to evade taxation and other obligations to the state.

REASONS (1) AND (2)

Berliner finds that Soviet management is on guard against giving the appearance of such plan overfulfillment as will result in a more difficult future assignment. It strives to preserve a margin of safety to facilitate plan fulfillment in the future. When there is substantial overfulfillment in a given period, it may "lend" output to the next period; that is, it may deliberately write down one period's output, and correspondingly write up output in a future period. Under the same circumstances, management may also "lend" output to the next period in order to assure itself of premiums for plan fulfillment in the next period. Berliner concludes:[60]

"The combined operation of the premium motivation and the safety factor results in a tendency to falsify reported fulfillment in a way that evens out the reported month by month plan fulfillment. In the unsuccessful months output is 'borrowed' from the future and in the successful months output is 'lent' to the future or 'repaid' to the past."

However, as with the "borrowing" technique discussed above, the writing down that accompanies the "lending" of output to a future period—be it motivated by the safety factor or by premiums—is in itself unlikely to affect significantly the reliability of physical output data (especially for whole industries) for larger segments of time, such as a year. Of more lasting importance may be write-downs of types (3), (4), and (5).

REASON (3)

The illicit diversion of "socialist property" by managerial personnel may be—and undoubtedly often is—simply for the direct personal benefit of the individual. As such, it is not very different, for the present purpose, from pilferage and theft by anyone else, and the problems of underreporting and writing down that have been

[60] Berliner, *op.cit.*, pp. 165f. The use of the borrowing-lending technique, with deliberate underreporting in some periods, is also reported in agricultural procurement in *P.Zh.*, 1955, No. 11, p. 28; and for an industrial plant in *V.S.*, 1956, No. 1, p. 60.

indicated earlier in this chapter apply here too. (However, we may note that managerial personnel has power not only over the goods themselves, but also over the paperwork that is supposed to control the transfer and disposal of goods. Hence it presumably has greater latitude in falsifying, or not falsifying, records than do others who "help themselves" to the goods.)

But at times the illicit diversion of goods may be for the enhancement of the position of the enterprise as such, personal benefit being indirect or secondary. "Gifts" to suppliers, party officials, inspectors, and auditors; the distribution of goods (or cash obtained from unauthorized sale of goods) to the enterprise's personnel as incentives; barter transactions of various sorts; sales at illegally high prices in order to replenish the till—these are some of the uses to which goods under the control of the management may be put in order to further the interests of the enterprise as such. At times such transactions are extremely complicated; and, of course, the direct interests of the individual (theft, embezzlement) and the interests of the enterprise may be furthered by the same transaction. Often the logic of such situations demands that the goods be deliberately underreported and underrecorded.

An illuminating case of write-downs was described in some detail by the investigating judge who cracked it. A certain *kombinat* (vertically integrated enterprise) producing starch and syrup from potatoes had large amounts of potato waste. To utilize it, a distillery was added to the establishment. There being no records of the waste going for fermentation and no mechanical device to measure the amount of alcohol produced, the way was open for illicit transactions. Only some of the alcohol was officially recorded and reported. "The unrecorded alcohol was systematically pilfered by the personnel of the *kombinat* and in part was expended in payment of various jobs [for the *kombinat*]. The material damages inflicted on the state in this manner totaled, at current wholesale prices, 2,642,000 rubles."[61]

It is also interesting to note what the alcohol was bartered for. The *kombinat* itself obtained a generator, packaging material, and various supplies. The chief accountant personally traded the alcohol for flour and other consumer goods, her customer being a village

[61] S.Z., 1948, No. 5, pp. 47-49. Cf. I. Ia. German, *Finansovyi kontrol' i dokumental'naia reviziia v mestnoi promyshlennosti RSFSR* [Financial Control and Documents Audit in Local Industry in the RSFSR], Moscow, 1948, p. 61, where the illicit sale of unrecorded output at a chemical plant is mentioned.

cooperative store. The personnel of the store in turn entered the alcohol on the books as vodka, pocketing the difference in value.

In the above case, writing down was easy because neither the input nor the output was systematically recorded. If the input is strictly controlled, the limits on write-downs are presumably narrower, and any serious rise in the input-output ratio may alert superiors to the pilferage.[62] But a seemingly safer and probably much more widespread method of writing down output than not recording it at all is to record above-standard products as *brak* (spoilage, rejects). The practice is reported by Berliner's informants,[63] and auditors are alerted to it in Soviet textbooks.[64] As Berliner notes, for this reason enterprises may overreport *brak* up to the maximum limit permitted by regulations. Because of the peculiarities of the price system, the goods so reclassified are at times sold, under the guise of *brak*, for much more than they would bring at the fixed prices applicable to above-standard products.

REASON (4)

Because of the pronounced and persistent sellers' market, Soviet enterprises tend to establish their own sources of supply. For the same reason, they would tend, under some conditions, to avoid reporting the production of goods for their own use, lest they be deprived of outside supplies or be forced to market their own intermediate products. I have no direct evidence that such concealment of production takes place, but it is strongly suggested by the logic of the situation, as well as by ample indication in the Soviet literature and other sources that enterprises go to great lengths to conceal *inventories* of materials and other inputs. The step from the under-

[62] This was the way in which pilferage was uncovered in the bakery case described by Konstantinovsky (footnote 58 above). An accounting expert recently wrote in the journal of the Ministry of Finance: "Financial auditors . . . must keep in mind that materials expenditure in excess of plan . . . may frequently conceal an inventory shortage *or failure to record output*" (*Finansy SSSR*, 1958, No. 6, p. 48; my italics). Thus one way to conceal pilferage of the product is to underrecord the inputs received from the outside. In the meat-packing plant case (footnote 58), this was done by cheating the collective farms on the weight of the livestock delivered by them to the plant. Anyway, in this case the existence of pilferage was known to city authorities, but they took no action because the director "was fulfilling his plan." (Of course, the city fathers may have been "in" on the pilferage in a more tangible way as well.)

[63] Berliner, *op.cit.*, pp. 146f. Cf. Granick, *op.cit.*, p. 146.

[64] See German, *op.cit.*, p. 38; and A. Kh. Ermolaev and G. R. Nak, *Dokumental'naia reviziia na zheleznodorozhnom transporte* [Documents Audit on Railroads], 2nd ed., Moscow, 1950, p. 124. The latter mentions the illicit sale of nails without appropriate allocation orders under the guise of *brak*.

statement of inventories of materials to the underreporting of production for own use seems to be a small one.

With regard to such inventories, the incentive is strong and only in one direction: to understate. The pages of *Vestnik statistiki* are full of complaints by the statistical authorities in this regard. For instance, one article in this journal presents a very instructive description of the heights of ingenuity scaled by enterprises in the concealment of inventory, and of the progressive elaboration of the census blank by the statistical authorities to counteract the efforts at concealment.[65] It is interesting to note that the *MVD* (Ministry of Internal Affairs) itself is not immune to concealing inventories. A German scientist who spent some time in a research establishment operated by the *MVD* describes the burying of stocks of supplies in the ground by camp authorities before the arrival of an auditing commission.[66]

REASON (5)

Lastly, deliberate underreporting may take place to evade taxes and other obligations to the state. This would apply particularly to enterprises not owned by the state. We have already noted that at the end of the twenties *TsSU* believed that the returns from the then still extant private industrial enterprises understated their output. The same may well be true of the reports of industrial cooperatives during the Plan era, which have been subject to taxes on profits since 1930 and to very highly progressive taxes since 1933.[67] While I have no evidence on this score, it is reasonable to suppose that industrial cooperatives (including the industrial establishments subsidiary to *kolkhozy*) tend to write down their output in order to understate their net profits or to facilitate the illegal (but profitable) disposal of their products. While the share of cooperatives in over-all industrial output is rather small[68] and has

[65] P. Pod'iachikh, "O nedostatkakh v provedenii perepisei materialov i proverki ikh itogov" [On the Shortcomings in the Conducting of Censuses of Materials and in the Checking of Their Results], *V.S.*, 1951, No. 5, *passim.*

[66] Otto Maar, "Kutschino," *Der Monat*, February 1955, pp. 409-424.

[67] For a brief history of taxes on industrial cooperatives, see Franklyn Holzman, *Soviet Taxation: The Fiscal and Monetary Problems of a Planned Economy*, Cambridge, Mass., 1955, pp. 211-213.

[68] According to official Soviet data, and in terms of the official industrial production index, cooperative and private establishments accounted for the following shares of the total gross output of industry in the given years:

	1928	*1937*	*1950*	*1955*	*1956*
Cooperative	13.0	9.5	8.2	8.1	6
"Capitalist and petty private"	17.6	0.2	none	none	none

been declining over the long run, nevertheless it continues to be significant in certain lines of production. Furthermore, if there is a significant difference in the accuracy of reporting between similar state-owned and cooperative enterprises (on which there is no evidence at hand), then the transfer of a large number of enterprises from cooperative to state ownership in a short span of time, as happened in 1956,[69] may appreciably distort output comparisons for certain commodities over the period in question.

Checks to Distortion

Enough has been said in the preceding sections of this chapter to demonstrate the existence of strong forces working to distort production statistics at the enterprise level. These forces spring chiefly from the self-serving activities of producers, although at times the motive may be devotion to duty conceived in a broad sense. The distortion may be accomplished intentionally in order to simulate the fulfillment of norms and plans, to reduce effort per unit of reported output, to have a "safety factor," or to conceal the diversion of goods to unauthorized uses. Or it may be carried out unintentionally (if not entirely unknowingly, let alone unsuspectedly), as in the case of underreporting occasioned by the theft of products before they even reach the stage of primary recording.

While distortion thus indisputably takes place in the reporting of industrial output within and by the enterprise, it is also obvious that it must be subject to certain limits. This not only suggests itself intuitively, but may be inferred from an examination of the published statistics, which are not patently nonsensical, and may be deduced from what we know of the operation of the Soviet economic system. (Consider that the existence of the "safety factor" in production planning as a principle of managerial behavior is in itself presumptive evidence that there are limits to statistical falsification by the Soviet manager, for if he could report any output figure at will he would have no need to attempt to obtain an easy plan.) But the limits to distortion are surely not primarily imposed by the incessant exhortations to abide by "high principles," or even by the mere existence of the relevant laws and regulations on the books.

(*Narodnoe khoziaistvo SSSR v 1956 godu* [USSR National Economy in 1956], Moscow, 1957, p. 47.)

[69] Note the sharp decline from 1955 to 1956 in the share of cooperatives shown in the preceding footnote. During 1956 some half million working persons were affected by the transfer of ownership (*ibid.*, p. 50).

Rather, they are defined by the realities of the situation as perceived by the individuals in question. That is to say, attempts to distort are subject to checks from various directions. Generally speaking, in the subjective estimation of the individual, the risks of detection and punishment at some point begin to exceed the benefits obtainable from the falsification of production data; therefore he does not go beyond that point. The estimation is subjective in two senses: (1) it takes place in the individual's mind; and (2) it reflects the individual's specific and unique situation, that is, his needs and aspirations, his relations with superiors, co-workers, and subordinates, the desperateness (if any) of his position, and so forth.

The checks on attempts to distort output data can be loosely classified into four categories: (1) checks within the enterprise itself; (2) control and supervision by administrative superiors; (3) control and supervision by the numerous Soviet auditing and law-enforcing agencies (other than administrative superiors) which we may call "the outside authorities"; and (4) checks by transactors, especially the buyer and the common carrier. These categories are not to be taken rigidly; the lines of demarcation between them are often vague. For example, the Party may be regarded as an outside authority or as an element within the enterprise, or (in a sense) even as an administrative superior.

Because of the strong subjective element in the picture and also because the "objective" conditions that deter or facilitate distortion of output data vary in time and space, it will obviously be impossible for me to define the exact points at which these checks begin to be effective. Instead, this section will examine why the four categories of checks, taken separately, fail as absolute preventives of inaccurate reporting. What is there in the nature of these checks and in the environment within which they operate that permits a certain amount of distortion in the reporting of output within and by the enterprise?

1. CHECKS WITHIN THE ENTERPRISE

Besides the director and the shop chiefs, who by virtue of their positions are the main culprits in this drama, the Soviet industrial enterprise typically contains a number of persons who are in some way—administratively, criminally, or financially—responsible for the truthfulness of production records and reports. The more important of these are: (a) the chief accountant, who, of course, is responsible for the accuracy of all of the important paper work in

the enterprise, and who for this reason is supposed to be the champion of state interests within the enterprise; (b) the head of the planning department, who, along with the director and the chief accountant, signs the periodic reports; (c) the chief of the *OTK* and his quality inspectors, who pass on the quality of output, and especially on its adherence to minimum standards; (d) the warehouse superintendents and storekeepers, who formally receive finished output and are charged with the safekeeping of inventory; (e) the secretary of the Party unit within the enterprise, whose functions in the plant are to ensure compliance with the law and to spur production; and lastly (f) the secretary of the trade union local within the enterprise, whose role, however, I shall not discuss because it is relatively unimportant for our purposes.

In the cases of all of these persons, malfeasance of duty, and especially falsification or other distortion of records and reports, is severely punishable by law. It would, therefore, seem that with so many watchdogs within the walls of his plant, the director's ability to distort output data with reasonable expectation of impunity is very limited indeed. But in fact this is not so, for under ordinary conditions the loyalty of all these individuals, including the Party secretary,[70] is often first to the enterprise and to each other, and only then to the regime or to "socialist legality" in some abstract sense. They are all enmeshed in a heavy "web of mutual involvement," as Berliner puts it. As he explains:[71]

"Awareness of common interests in plan fulfillment often generates within the enterprise a 'family relationship' in which Party secretary, chief accountant, and other control officials facilitate or overlook the transgressions of an enterprising and successful director and share in the rewards and prestige that come with plan fulfillment. It is the fact that the control officials perceive their own fates as closely interwoven with the success of the enterprise that explains the endurance of the irregular practices of management [including the falsification of reports—G.G.]."

To this succinct description one need only add the consideration that the Soviet manager wields great power over his subordinates and is therefore usually able to enlist their passive or active cooperation in his illicit activities. Once the subordinate has coop-

[70] Cf. Berliner, *op.cit.*, Chapter XIII, and pp. 264-271, 324f.
[71] *Ibid.*, pp. 324f.

erated, he has compromised himself in the eyes of the law and weaves his own interests more readily into the fabric of mutual involvement.

The chief accountant is looked upon by the regime as the guardian of legality, and of the state's interests in general, within his enterprise or organization. His appointment, dismissal, or transfer, as well as the awarding of premiums and bonuses to him, is formally undertaken by the agency superior to the one in which he is employed. Interference with his duties is punishable by law.[72] And yet, the accountant's pliability in the hands of the manager is a well-established, almost proverbial, fact, amply attested to both by the continual exhortations addressed to him in the Soviet literature and by the reports of defectors.[73]

The situation is similar with the chief of the department of quality control (*OTK*), the regime's guardian of quality standards. Despite the severe criminal penalties for the production and shipment of substandard or incomplete articles, which penalties apply specifically to the chief of *OTK*, he is typically under great and often irresistible pressure from the director and other officers of the enterprise not to reject products or to upgrade them.[74] This fact received full and frank recognition in the resolution of the USSR Council of Ministers, dated September 23, 1952, on improving the quality of industrial output, to which I have already referred. The resolution stated that the *OTK* "perform their tasks unsatisfactorily . . . are inadequately staffed with competent personnel and enjoy little authority . . . [and] there are cases when the chiefs of *OTK*, acting under pressure from the managements of the enterprises, pass articles that are of bad quality, incompletely assembled, substand-

[72] The latest legal definition of the chief accountant's status, rights, and duties is to be found in the resolution of the USSR Council of Ministers dated Sept. 17, 1947, and the annexed statute (*polozhenie*); see Bakhchisaraitsev, *op.cit.*, pp. 500ff.

[73] Cf. Berliner, *op.cit.*, Chapter XIII.

[74] See *ibid.*, pp. 233f., 238-241, and 254.

Quality inspection absorbs a considerable portion of the resources of Soviet industry. A recent article (S. Kheinman in *P.E.G.*, Oct. 2, 1959, p. 4) states that "according to the latest occupational census conducted by *TsSU SSSR*, the industrial enterprises of the former union and union-republic industrial, construction, and transportation ministries alone employ over 500 thousand quality inspectors, controllers, sorters, and disassemblers (*razborshchiki*), who draw about five billion rubles in wages annually." The date of the census is not known, but apparently it took place before the abolition of most industrial ministries, i.e. before July 1957. In 1956 the total number of wage earners in state-owned industry was 15 million.

ard, or [in other ways] do not meet technical specifications." Annexed to the resolution were model standard statutes (*tipovye polozheniia*) on the structure, rights, and duties of the *OTK* in different branches of industry, which, *inter alia*, stipulated that chiefs of the *OTK* are to be appointed and dismissed by agencies superior to the enterprise; that rewards and punishments are to be dispensed to them by the minister (i.e. not by the director of the enterprise); reaffirmed that *OTK* chiefs are subject to the provisions of the edict of 1940 on quality of output; gave them authority to stop the production or delivery of products that do not meet requisite standards; and provided that a director can overrule this authority only if he immediately and in writing notifies the chief of the corresponding *glavk* and the head of the ministry's Chief Quality Inspectorate.[75] There is no evidence on which to judge the effect of the resolution of 1952 on the authority and effectiveness of the *OTK*. It is, however, quite clear from the Soviet literature that the ineffectiveness of the quality inspectors has not been entirely eliminated.[76]

The storekeepers and warehouse superintendents, being financially responsible for the integrity of the inventories in their charge, might seem to present more effective checks to write-ups by management, since write-ups might appear as shortages in the finished goods inventory. We have already noted that some Soviet sources regard the warehouseman as an effective obstacle to write-ups (though to write-ups by workers rather than by management in the examples cited).[77] However, the total picture given by the Soviet literature is quite different. The continual references to shortages of finished goods inventory in Soviet auditing manuals,[78] in the organ

[75] *Direktivy KPSS*, Vol. III, pp. 642ff. The source reproduces four such "model statutes," numbered Annexes 2 through 5, and together covering nearly all of industry with the exception of the specialized branches producing military and related articles. It seems likely that the unpublished Annex No. 1 refers to these branches.

[76] To pick two recent items at random: An author discussing problems of quality control in the tractor industry considered the *OTK* unreliable in this respect (*Avtomobil'naia i traktornaia promyshlennost'*, 1955, No. 7, p. 1). In the Sestroretsk tool plant in Leningrad "it happens that a quality inspector rejects a lot in the middle of the month, but surprisingly by the end of the month [i.e. at output reporting time—G.G.] the articles turn out to be 'O.K.' and are delivered to the warehouse as above-standard products" (*P.E.G.*, Dec. 11, 1957, p. 3).

[77] See the section on write-ups by the worker.

[78] Cf., *passim*, such books as Alenchikov, *op.cit.*; N. A. Sokolov, *Kompleksnye dokumental'nye revizii na zheleznodorozhnom transporte* [Comprehensive Documents Audits on Railroads], Moscow, 1955; German, *op.cit.*; and Ermolaev, *op.cit.*

of the Procuracy *Sotsialisticheskaia zakonnost'* [Socialist Legality] (especially after the edict of June 4, 1947, on "criminal responsibility for the theft of state and public property"), and in books dealing with the enforcement of the legislation against theft[79]—all leave little doubt in the reader's mind that such inventory shortages are a prevalent phenomenon in Soviet enterprises. Some shortages, such as those of bulk commodities stored in the open, are difficult to detect by the very nature of the goods; others are concealed by the (at times perhaps intentional) disorder in the warehouse; still others are concealed by more ingenious techniques.[80] Of course, not all inventory shortages are the result of write-ups; some, or even most, may be due to ordinary pilferage or theft. But if shortages can be concealed, write-ups of output are invited.

2. CONTROL BY ADMINISTRATIVE SUPERIORS[81]

The relationship of the enterprise to its administrative superiors has been investigated by Berliner, with special reference to the un-

[79] E.g. T. L. Sergeeva, *Ugolovno-pravovaia okhrana sotsialisticheskoi sobsvennosti v SSSR* [Protection of Socialist Property in Soviet Criminal Law], Moscow, 1954, *passim*; and B. S. Utevskii and Z. A. Vyshinskaia, *Praktika primeneniia zakonodatel'stva po bor'be s khishcheniiami sotsialisticheskogo imushchestva* [The Experience with the Application of Laws Against the Theft of Socialist Property], Moscow, 1954, *passim*.

[80] The following example of an ingenious technique, though referring to materials rather than to finished products, is given by a textbook on auditing (Alenchikov, *op.cit.*, p. 76): "There have been cases where systematic theft of materials from storerooms was covered up for a long time by the filing of knowingly groundless claims against suppliers for shortages allegedly discovered at the time of delivery. Such false claims having been rejected by the suppliers, they were then submitted for litigation, the court, of course, denying the plaintiffs' suits. In this fashion the stolen assets were written off legally as bad debts whose collection was denied by the court."

[81] The exact structure of the economic administrative hierarchy varies from branch to branch, place to place, and time to time. By administrative superiors of the enterprise I mean, of course, such entities as the "trust" (*trest*), the "chief administration" (*glavk*), and the ministry, and (since mid-1957) the regional "council of the economy" (*sovnarkhoz*) and its branch administrations (*otraslevye upravleniia*). For the pre-1957 structure of the economic administrative structure in industry, see A. Arakelian, *Industrial Management in the USSR* (translation of *Upravlenie sotsialisticheskoi promyshlennosti*, Moscow, 1947), Washington, 1950, Chapter 4; A. F. Rumiantsev, *Organizatsiia upravleniia promyshlennost'iu SSSR* [Structure of Management of Soviet Industry], Moscow, 1953, pp. 26f.; Granick, *op.cit.*, Chapter II; and *Ekonomika promyshlennosti SSSR* [The Economics of Soviet Industry], Moscow, 1956, Chapter 2. For the structure since mid-1957, see A. N. Efimov, *Perestroika upravleniia promyshlennost'iu i stroitel'stvom v SSSR* [Reorganization of Administration of Industry and Construction in the USSR], Moscow, 1957, Chapter 3.

lawful and informal activities of the management.[82] I have nothing to add to his careful study. The essence of his findings is that the ministries (and other higher-level entities—and, one may suppose, since 1957 also the *sovnarkhozy* and their departments) are judged by the success of their subordinate enterprises; that therefore the interests of the superior entity largely coincide with those of the enterprise (except in some instances, e.g. where the interests of two subordinate enterprises are in conflict); that the "web of mutual involvement" often extends above the enterprise; and that therefore the superior agencies will overlook simulation and other illicit acts by management, and at times will perhaps even actively support such acts. That is to say, the enterprise's administrative superiors do not, by and large, offer effective checks to distortion of output data on the enterprise level, at least as long as the distortion remains within "reasonable" or "acceptable" bounds. This is not to say that the manager may not try to deceive his administrative superiors in the economic hierarchy in order to obtain a "safety factor" or for other compelling reasons, and they may in turn react by exercising their authority.[83]

There is little reason to suppose that the relations between the enterprise and the higher economic administrative levels have changed radically as a result of the supercession of ministries by *sovnarkhozy* in the middle of 1957. This reform has not, as yet, entailed any radical changes in the system of planning, or in the structure of success criteria and of the corresponding incentives. Nor has the sellers' market been done away with. There is every reason to believe, therefore, that the old principles and patterns of behavior of the manager—and of his superiors—have survived the reorganization of industrial administration. Indeed, it is possible to argue that, *ceteris paribus*, the *sovnarkhozy* are more prepared to tolerate distortion in the reporting of output than were the ministries. As we have seen, this toleration arises from an identity of interests and is reinforced by a "web of mutual involvement." Might not the regional economic councils, and the branch administrations under them, identify their interests with those of the individual enterprises, and contrapose them to the interests of "Moscow," even more than did the far-off *glavki* and ministries? Might there not be greater opportunity for close personal ties between the manager and his administrative superiors under the regional arrangement? To

[82] Berliner, *op.cit.*, Chapter XIV, pp. 165, 283f., and 324.
[83] Cf. *ibid.*, pp. 257f.

further the now institutionalized "localistic" interests, might there not be even greater unlawful diversion of materials and products, with corresponding statistical manipulation, than before?

Although the local Party and Soviet (i.e. governmental) officials are not formally the administrative superiors of the enterprise,[84] they can be regarded as such for present purposes. *De facto*, local Party and Soviet officials wield some (often great) power over the enterprise and are responsible to their superiors for plan fulfillment within their territorial jurisdiction. (The creation of the *sovnarkhozy* has probably augmented the *de facto* authority and responsibility of these officials.) Therefore their interests tend to coincide with those of the enterprise (and now also with those of the *sovnarkhozy*), and they can be expected to take the same attitude toward simulation by the enterprises in their charge as is taken by the economic administrative superior agencies.[85]

3. CONTROL BY OUTSIDE AUTHORITIES

It would seem at first glance that the multiplicity of controlling and auditing agencies (beside those discussed in the preceding section),[86] the severity of the punitive measures at their disposal, and the thoroughness of the police system would successfully thwart the commission of such "economic crimes" as the falsification of output data and related illegal acts. Yet even the least acquaintance with Soviet reality leads one to the conclusion that "economic crimes" are extremely prevalent and to the conjecture that for each case that reaches the daylight of publicity there must be many that never do. An important factor is, of course, the inherent advantage that any insider has in concealing irregularities from the outside auditor's view—what in its more extreme form might be called Pooh-Bah's Law[87]—aided by the complexities of the very paper work that is intended to entrap the culprit, and abetted by the inspector's corruptibility and his reluctance to stir up a possible hornet's nest.[88]

[84] Except in the common case where the enterprise is part of "local industry," i.e. administratively subordinated to the local soviet.

[85] Cf. Berliner, *op.cit.*, Chapter xv. See also the role of the local Party authorities in the creamery case (footnote 35, this chapter).

[86] For example, the State Bank, the Ministry of Finance, the statistical apparatus, the trade union, the political police, the ordinary police, the Ministry of State Control.

[87] ". . . as Paymaster-General, I could so cook the accounts that, as Lord High Auditor, I should never discover the fraud."

[88] It is noteworthy that during the early postwar years, the period for which S.Z., the organ of the Procuracy, was available to me, reports of successful

Local Party officials are not unflagging guardians of legality; on the contrary, they may be closely linked by ties of kinship and friendship and through the usual web of mutual involvement to those whom they are supposed to supervise and exhort. Party members often hold managerial positions themselves. Moreover, the greater their authority, the more opportunities there are to turn it to personal advantage. Thus, despite a specific order from the Central Committee requiring all Party organizations to uncover write-ups and to bring the culprits to justice forthwith, membership in the Party does not seem to preclude connivance with, and even participation in, the distortion of reports and other "economic crimes."[89] Bribery of local Party officials in connection with such acts has also been reported.[90]

Very little is known about the alertness of the secret police to false reporting and related crimes, but some information is available on the role of the Procuracy in this regard. This information indicates that, at least in some periods, the Procuracy failed to exercise the expected initiative in supervising the enforcement of economic legislation and to investigate and prosecute anything like all the cases of law violation that came to its attention. An internal order of the Procurator of the USSR, dated February 20, 1936, complained of the "completely unsatisfactory state of supervision" by agencies of the Procuracy over the enforcement of "statistical discipline," and called for an immediate improvement in this respect.[91]

A few years later, the journal of the State Arbitration Commission complained: "There are many instances where agencies of the Procuracy not only fail to exercise initiative in prosecuting individuals guilty of producing *brak,* but even fail to react to notices from arbi-

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discovery of economic crimes were usually concluded by a statement that the investigating judge in charge was promoted and awarded two months' salary for the commendable discharge of his duties. As to corruptibility, my information comes orally from, among other sources, a former inspector for the Ministry of Finance. On the low quality of audits, see also *B.U.*, 1954, No. 4, pp. 1-6, and *P.E.G.*, May 15, 1959, p. 3.

[89] See, for instance, *P.Zh.*, 1955, No. 11, pp. 28-30. Ample confirmation can also be found in the accounts of defectors, e.g. Konstantinovsky, *op.cit.*, p. 18. Cf. Merle Fainsod, *How Russia Is Ruled,* Cambridge, Mass., 1953, pp. 203ff., on the relations of local Party officials to economic affairs. For a recent complaint that local Party units defend "localistic" interests, see *Pravda,* Sept. 1, 1958, p. 2.

[90] Cf. Konstantinovsky, *op.cit.*, p. 23. For a recent account of bribery of a local Party official, see *Pravda*, Aug. 27, 1958, p. 2.

[91] *B.F.Kh.Z.*, 1936, No. 13, p. 41.

tration agencies regarding the mandatory prosecution of specific culprits."[92] Konstantinovsky confirms this general picture when he recalls that in his experience, i.e. before the war, "the number of cases [of inventory shortage] in some years was so great that the organs of the Procuracy and the judicial investigating organs did all they could to prevent, if possible, any more such cases from reaching the courts."[93] This situation seems to have persisted despite—or perhaps because of—the intervening enactment of the harsh 1940 edict on the production of defective goods, the enforcement of which was entrusted to the Procuracy. In 1947, an article in the journal of the Procuracy itself complained that very few such cases were being initiated by the prosecuting agencies, implying that this was due to their negligence rather than lack of grist for the juridical mill; and that such cases as were initiated pertained chiefly to consumer goods, a relatively less important part of the edict.[94] And lastly we may note here, as we have already noted in an earlier section of this chapter, that the 1952 resolution of the Council of Ministers on the quality of industrial production explicitly complained of the failure of the Procuracy to discharge its duties effectively in this regard.[95]

The statistical apparatus itself, of course, is charged with checking the quality and truthfulness of the reports submitted to it, whether by enterprises or by higher entities. The literature of the thirties contains only occasional statements that such checks were not adequately conducted, but the postwar literature is replete with complaints on this score with a definite crescendo from 1949 to 1951.[96]

While it is conceded that the local statistical offices conduct

[92] *Arbitrazh*, 1939, No. 11, p. 3.

[93] Konstantinovsky, *op.cit.*, p. 17. Granick (*op.cit.*, pp. 190-191) similarly concludes that "the weapon of criminal prosecution against management has been used sparingly" except in "national campaigns to show that the State means business." He notes, moreover, that initiative for criminal prosecution of management was (in the thirties, at least) "retained by economic organs above the firms, such as the glavki," and that ". . . Soviet legal organs have—in the field of industry—been geared primarily to acting in the interests of production 'success'" (*ibid.*, pp. 199-200).

[94] S.Z., 1947, No. 8, pp. 3f. See also footnote 10, this chapter.

[95] See p. 71.

[96] See especially *V.S.* 1951, No. 2, pp. 91-95, and No. 5, pp. 57-61. In 1949/50 the Party and the government issued directives demanding improvement in this regard; these were followed by an internal order of *TsSU* (dated Jan. 26, 1950) and accompanied by a series of special conferences (*ibid.*, No. 2, pp. 92f.).

numerous audits of enterprises and departments in order to ascertain the truthfulness of reports, these checks are said to be usually superficial, poorly organized, "formalistic" and routine, and too brief. The quality of audits suffers in part because too many are undertaken. (One wonders to what extent the reports of local statistical offices are themselves "written up" in this regard.) These structures usually appear in the same context as the exhortations to the statistical personnel to be honest, to abide by high principles, etc.

Postwar sources also constantly complain of the "liberal" attitude evinced by the supervising authorities—be they Party organizations, government agencies, or statistical agencies—toward the wrongdoers.[97] Obviously there has been considerable reluctance, probably combined with clogged dockets, on the part of the various authorities to invoke full legal sanctions, and if action was taken at all, it was often, though clearly not always, confined to a "cease and desist" order or a mild reprimand. The relaxation of terror since 1953 may have augmented the feeling on the part of managerial personnel that "one can get away with things," although it may also have reduced the necessity to falsify in order to survive economically. Time may tell whether these conjectures are valid.

4. CHECKS BY TRANSACTORS

If write-ups, unjustified upgrading, the counting of *brak* as valid finished output, and similar practices that overstate the enterprise's performance are not to leave lasting and incriminating evidence in the form of discrepancies between internal records and the physical inventory of finished goods, they must be, so to speak, "shipped out" of the plant and "passed on" to the enterprise's customers. That is to say, the invoices and related papers must overstate the quantity, grade, or quality of the goods shipped. But it would seem that the transactors—the buyers of the goods and the common carriers who haul them away—have a clear interest in thwarting

[97] Cf. *P.Zh.*, 1955, No. 11, pp. 28-30 and 80; *V.S.*, 1951, No. 2, pp. 92f.; No. 5, pp. 55 and 60; 1953, No. 1, p. 23; 1955, No. 6, p. 11. Tsonev (*op.cit.*, p. 153) also notes the mildness of the penalties for transgressions of this sort that have been reported by the press in postwar years, compared with those meted out in the thirties and during the war. On the other hand, this does not mean that harsh penalties were also not dispensed after the war for certain "economic crimes." For instance, the sentences for theft of food mentioned in S.Z. during 1947 and 1948, years of great food shortage, can be characterized only as savage.

anything of this sort, and that they consequently provide a very important check to write-ups, etc., on the part of producers. That checks by transactors, especially by buyers, are often more effective than the three types of checks already discussed is indeed occasionally borne out by the evidence. For example, a Soviet author recently wrote:[98]

"It is well known that administrative control, exercised from the top downward, over the activity of enterprises with regard to quantitative and qualitative fulfillment of plans by individual commodities [*po nomenklature*] has never been either effective or timely without the mutual checking of the seller and the buyer at the time of delivery of the goods."

Moreover, because of the possibility of cross audits by the various control agencies, the seller would presumably avoid entering or declaring on invoices and waybills information that contradicted his internal records and his statistical and accounting reports. Consequently there would seem to exist an unbroken chain of control linking the physical goods with the producer's reports: the buyer and common carrier, acting to safeguard their own interests, verify the invoices and waybills against the physical goods they receive; copies of these documents remain in their files; and, at any later time, any auditing authority presumably *can* check these documents against the seller's (producer's) internal records, statistical and accounting reports, and finished goods inventory on hand. Write-ups and similar practices would thus seem to be precluded.

And yet we already know that some of the links in this chain are rather weak. Even the link involving transactors, though perhaps frequently stronger than the others because of self-interest, is nonetheless far from infallible. Its weakness may derive from three circumstances: (1) collusion between the producer and the customer (or other transactor); (2) domination of the buyer by the seller due to the prevailing seller's market; and (3) in the case of the common carrier, negligence abetted by a possible coincidence

[98] I. M. Broide, "O novykh formakh upravleniia v neftianoi promyshlennosti" [On the New Structure of Management in the Petroleum Industry], *Sovetskoe gosudarstvo i pravo*, 1957, No. 5, p. 46. The article argued for the retention of supply organizations (*sbyty*) after the 1957 reorganization of industry. The phrase "the mutual checking of the seller and the buyer" obviously stands euphemistically for "the checking of the seller by the buyer."

of interests with the shipper. Of the three, collusion may be the least prevalent, if only because it generally presupposes that the two (or more) colluding enterprises are each other's regular customers. Yet it apparently happens. Consider the following actual case of a dairy and a plywood factory. The dairy sold casein to the plywood factory for the manufacture of glue, while the factory sold plywood to the dairy for boxes to pack the casein (and possibly other dairy products). By collusion, the two enterprises wrote up the output of casein and plywood, respectively; illegally diverted some of the raw materials; and "shipped out" the fictitious portions of output to each other with the aid of false invoices.[99]

As we have just seen, an alternative to "piling up" the written up portion of output—be it *brak* or completely nonexistent products—in one's own warehouse is to "ship it out" to one's customers. This alternative has the advantage of removing the evidence of irregularities (*brak* or shortages) from the producer's premises, but has the obvious drawback that it runs counter to the interests of the customer. At first glance, it would therefore seem, by and large, impossible to cover up the overstated portion of output by "shipping it out." But the Soviet literature leaves no doubt that this is done on a substantial scale; certainly with *brak*, but also occasionally with never-produced output. The explanation of this paradox lies in the specific characteristics of the Soviet economic scene, and particularly of the chronic sellers' market. It does not seem to make any substantial difference in this respect whether the product is under centralized allocation ("funded") or not.

The persistent and sometimes severe excess of demand over supply (at the stated price) frequently causes buyers to overlook deviations from quality specifications and to accept substandard products, to accede to tie-in sales, and occasionally even to wink at shortage in quantity. Buyers tend to "take what they can get" and are reluctant to remonstrate with suppliers or to invoke legal measures for fear of spoiling relations with them. For instance, a 1937 article in *Arbitrazh*,[100] the journal of the State Arbitration Commission, complained that few cases about the quality of supplies were initiated by buyers before that body and explained this fact in approximately the terms given above; while a more recent source inveighed against "the rotten practice [among enterprises]

[99] This case was related to me from personal recollection by Professor Edgars Dunsdorfs of the University of Melbourne, formerly of Riga, Latvia.

[100] No. 15, pp. 3-5.

of granting 'mutual forgiveness' for nonadherence to conditions of delivery."[101] The same is implicit in the endless complaints of buyers, of producer as well as of consumer goods, which have been filling the Soviet press almost daily since the beginning of the Plan era. Only infrequently do these complaints give any reason to believe that the goods were returned to the seller (producer) for being defective in quality or short in quantity.[102]

The common practice of suppliers to hold up delivery until late in the accounting period, when buyers are most desperate to meet their plan targets and are therefore more vulnerable to the supplier's pressures, probably facilitates the shipping out of *brak* and fictitious output. Another contributing factor seems to be the poor organization of the receiving department in many enterprises, mentioned in postwar as well as prewar sources.[103]

This is not to say that some defective goods are not returned to the producer. Thus, the text of the 1952 resolution of the Council of Ministers on the quality of industrial output, already mentioned more than once above, states that in 1951 representatives of the USSR Ministry of Agriculture returned to the plants of the Ministry of Agricultural Machine-Building for elimination of defects 11.2 per cent of the agricultural machines delivered to the former; while the customers of the tractor plants of the Ministry of the

[101] *P.Kh.*, 1956, No. 1, p. 65; cf. *Finansy SSSR*, 1955, No. 7, p. 43.

[102] On the quality of output, see also pp. 70ff. For a fuller discussion of the shipment of *brak* to customers and of the weakness of their resistance to this practice, see Berliner, *op.cit.*, pp. 149ff., 239, and 254. It is clear from the literature that the practice persists and that buyers still have little choice but to take what they are given. For a couple of striking illustrations, drawn virtually at random from the recent literature, and both incidentally referring to high-priority articles (diesel locomotives and heavy mechanical presses), see *P.E.G.*, Sept. 18, 1957, p. 2, and Dec. 11, 1957, p. 3.

An illuminating recent article on the quality of construction contains a brief but pointed discussion of the low quality of building materials and makes it quite clear, if not explicit, that construction organizations can do little but accept defective materials (Paraubek, *op.cit.*, pp. 374-377). The author states, for instance, that "at the present time" as much as 60 per cent of the brick does not correspond to standard specifications, some of it deviating [downward?] as much as 2.5 cm from the standard, and that the actual grade of brick reaching the construction site frequently is below that indicated in the corresponding invoice (*pasport*). Compare the following statement, also pertaining to the construction industry: "The shortage of materials, parts, components, plumbing supplies, etc., leads to the situation that the contract and the obligations stipulated by it lose their force. Sanctions are not applied. The builders use any supplies that are delivered to them, filing no claims on account of their quality, times of delivery, completeness of assembly, grade of product, and the like" (*V.E.*, 1957, No. 4, p. 82).

[103] Cf. *Z.I.*, June 11, 1937, p. 2; and Alenchikov, *op.cit.*, pp. 105f.

Automotive and Tractor Industry returned 22 per cent of the tractors delivered to them.[104] However, we are not told what effect, if any, this had on the production reports submitted by the agricultural machinery and tractor plants, nor do we know whether the items returned account for *all* the defective products of these plants in the year in question. (We may doubt the latter considering the frequent complaints about the quality of the machines as they arrive in the countryside.) In general, the ability of a producer to "ship out" the written up portion of output (by cheating on quantity, or unjustified upgrading, or delivering *brak*) and to get away with it would seem, to a large extent, to depend on the countervailing power, including the political "pull" and the priority ranking, possessed by the customer. The shoddiness of Soviet consumer goods and the poor quality of building materials, on the one hand, and the excellence of many military articles, on the other, amply illustrate this point.[105]

When the *quantity* of the shipment is overstated, the shipper must face, in addition to the checks imposed by the buyer, the possibility of checks by the common carrier, which is usually the railroad. Since the carrier is responsible for the safe delivery of the goods, it might be expected to make sure that the accompanying documents do not overstate the size of the shipment. But in reality it seems to be rather negligent in this respect, and furthermore its interests seem to be more equivocal. The railroad has its freight loading and freight haulage plans, revenue and unit cost targets, and various other "qualitative norms" to meet and overfulfill. It may thus be quite willing to overlook the shippers' overstatement of weight.[106] We may also note that loading gangs are apparently paid on a piece-work basis[107] and may therefore welcome and abet write-ups of the weight of shipment. These impressions are corroborated by Professor Williams' study of Soviet transportation statistics.[108]

[104] *Direktivy KPSS*, vol. II, p. 642. The text is careful to stress that in both cases the articles had been passed by the *OTK*.

[105] Cf. Berliner, *op.cit.*, p. 152.

[106] At times the carrier may write up the weight liberally himself; in some trucking firms in Leningrad such write-ups are said to have been as high as 300 to 400 per cent (*Finansy SSSR*, 1955, No. 7, p. 43).

[107] Sokolov, *op.cit.*, pp. 13 and 131.

[108] "Soviet tons originated are clearly overstated as a result of showing on freight waybills more tonnage than is actually loaded in cars, although we cannot say by how much" (Ernest W. Williams, "Soviet Transportation Development: A Comparison with the U.S.," *American Economic Review*, May 1958, p. 414).

The waybill of a Soviet railroad contains spaces to enter the weight of the shipment as determined by both the shipper and the railroad.[109] However, the railroad's representative does not always weigh the freight. Rather, the rule is that he weighs the freight only when it is loaded from the railroad's warehouse or at a station. When the freight is shipped from a plant's siding, or its own warehouse, or other "loading points not in common [open] use," the weighing is done by the shipper.[110] It would seem that the latter is the typical situation with Soviet industrial plants of any substantial size. This may amount to a significant loophole for the overstating of the quantity of goods shipped.

It seems, therefore, that the carrier does not present an insurmountable barrier to the "shipping out" of the written up portion of output.

To conclude this chapter, it has been demonstrated that the Soviet enterprise is a major source of distortion in Soviet industrial output statistics. More often than not the result is overstatement of output (this concept, of course, being understood in a manifold way, including quality standards and other considerations). But in some respects the actions of the enterprise (and of self-serving individuals within it) may cause understatement of output. I shall gather the various strands of the argument in the last chapter.

We may also note in passing that the data on mileage and ton-mileage in trucking may be considerably exaggerated because drivers are remunerated by the mile or ton-mile. Manipulation of speedometers, dumping of gasoline (when its apparent consumption is taken as evidence of the distance traveled), and writing up of the tonnage carried seem to take place on a large scale. See, for example, *Pravda*, June 5, 1959, p. 4, and *Voprosy stroitel'stva kommunizma v SSSR* [Problems of the Building of Communism in the USSR], Moscow, 1959, p. 352.

[109] I. V. Kochetov, *Zheleznodorozhnaia statistika* [Railroad Statistics], Moscow, 1953, Annex 1.

[110] Article 72 of the Railroad Charter, as cited by V. N. Izvolenskii, *Pravovye voprosy zheleznodorozhnykh perevozok* [Legal Aspects of Railroad Haulage], Moscow, 1955, p. 61. Cf. A. M. Beliakova, "Voprosy otvetstvennosti zheleznykh dorog po dogovoru perevozki gruzov v praktike Verkhovnogo Suda SSSR" [Responsibility of Railroads with Regard to Freight Haulage Contracts as Interpreted by the USSR Supreme Court] in *Uchenye zapiski* [Learned Notes], Issue 168, Book 7, Moscow, 1954, p. 43. A recent article describing illegal trade in scrap metal states that "the railroad makes out formal papers [*kommercheskie akty*] by weighing only every tenth car and accepting the shipper's documents' for the rest," and adds: "What brilliant prospects for dishonest people" (*P.E.G.*, Jan. 8, 1958, 3).

CHAPTER 6

Processing at Intermediate Levels

THERE is very little information on what happens to physical output data (or, for that matter, any statistical data) after they have been reported by the individual enterprise. As these data move upward, they are presumably combined into larger totals at the various points of confluence in the statistical flow channels, are grouped and tabulated in various ways, and at some unknown point are supplemented by estimates of the output of the smaller enterprises that do not report continuously. What numerical adjustment these data may undergo at the intermediate levels, either for the sake of greater accuracy or for the promotion of selfish interests, we generally do not know. However, we may suppose that no regular or systematic correction for greater accuracy of the physical output data submitted by continuously reporting industrial enterprises is undertaken at the intermediate levels; for otherwise the specialized literature would be likely to contain, which it does not, instructions and articles on the methods of making such corrections.[1]

As we have seen, until the middle of 1957 the data submitted by the enterprises flowed upward mainly through two parallel channels: the economic administrative hierarchy and the statistical apparatus. Let us consider the two in turn.

Distortion in the Economic Administrative Hierarchy

We have already established that the echelons of economic administration above the enterprise generally share the latter's interests in presenting a favorable picture of plan fulfillment, and that therefore ministries and their subdivisions (and since 1957 *sovnarkhozy* and *their* subdivisions) often cover up the shortcomings of, or overlook simulation by, the enterprises subordinate to them. But do they, on their own part, write up (or down, as the case may be) the data they receive from below? I have come across no direct, specific evidence that they do. Indirectly, however, this is strongly sug-

[1] This is not so in agriculture. For instance, the livestock census returns for 1933 and 1934 (and possibly later years) were corrected upward by *TsSU* to compensate for underreporting revealed by sample checks (*Plan*, 1935, No. 11, p. 19). See also the case of milk production statistics later in this chapter. I should not be surprised if *TsSU* has also been correcting upward for alleged underreporting other agricultural statistics, among them the "biological crop" returns.

gested by the fact that ministries and other higher level entities are almost always mentioned by the statistical authorities in the same breath with enterprises in connection with dishonest reporting.[2]

It would seem, a priori, that the administrative levels above the enterprise, insofar as they do distort, would be much more likely to write output up than to write it down (except in the relatively unimportant form of "lending" output to other periods). The more significant type of write-down—underreporting to conceal illicit diversion of the product—would hardly seem to serve a purpose at the level of the trust, *glavk*, *sovnarkhoz*, or ministry (except insofar as individuals at these levels may be "in" on such things).

Apart from any possible deliberate distortion, some mislabeling of commodity categories may enter production statistics at this level because of a lack of tidiness in the specialization of enterprises and the organization of industry. At least this is suggested by the following extract from a recent newspaper article:[3]

"The Ural Chemical Machinery Plant continues to produce articles not corresponding to its specialization, such as equipment for the iron and steel industry, the food-processing industry, construction of electric power stations, and so forth. Yet, strange as it may seem, all this output is also designated in the plan as chemical equipment. . . . The RSFSR *Gosplan* draws up the plan [for the U.C.M.P.] just as the former Ministry of General Machine-Building used to do it. . . . Only one-third, and at times even less, of the total output of the U.C.M.P. goes to the chemical industry."

We may assume that if the nonchemical equipment is listed in the plan as chemical equipment, it is also reported as such for statistical purposes. While I have seen no direct evidence to this effect, the same kind of confusion of commodity categories may well happen in other machine-building plants producing a wide variety of equipment.

[2] Cf. *V.S.*, 1951, No. 2, pp. 91-95, and No. 5, pp. 57-61. Also, consider the following statement by Ezhov, chief of the industrial statistics division of *TsSU*, at a conference of regional statisticians (italics added): "The struggle for reliability of reported data is a most important task of the agencies of state statistics. The personnel of the [federal, republic, and local—G.G.] divisions and sectors of industrial statistics must radically improve their work of checking the reliability of reported data; they must intensify the struggle against the still persisting efforts of individual persons in enterprises *and ministries* to embellish the actual state of affairs, etc." (*V.S.*, 1952, No. 5, p. 88).

[3] *P.E.G.*, May 13, 1959, p. 3.

Distortion in the Statistical Apparatus

Our ignorance of Soviet statistical practices becomes virtually complete at the point where the data reach the statistical apparatus. Apart from the criticisms already mentioned, the typical complaint by the higher statistical authorities of the work of the local statistical offices is that they tend to act as mere transmission belts for data, shying away from economic analysis of the material in their possession. I have come across no mention by statistical authorities of concrete instances of data distortion *initiated* by the statistical apparatus, although such outright statements should perhaps not be expected in any case from the leadership of a bureaucratic organization which is responsible to the regime for the accuracy of information.

It would seem that the statistical agencies have little incentive to distort physical output data on their own initiative, and if they do so, it is by dint of pressure from interested parties, such as the planners, the producers (enterprises, trusts, ministries), and the local political authorities (Party units, local soviets). Since the local political authorities in the USSR are held responsible for the economic activity within their area, and particularly for plan fulfillment, their interests in this regard would seem to parallel closely those of the producers themselves. Pressure on the part of local political authorities is clearly a touchy subject, but direct or oblique references to it do occasionally crop up in the literature. Consider the following revealing statement at a conference of statisticians in Kalinin *oblast'*, September 1935, by Kraval' then the chief of *TsUNKhU*:[4]

"The most heartening thing about this conference is the complete unanimity of opinion between *TsUNKhU* and the representatives of the leading [i.e. political—G.G.] organizations of the *oblast'*. It is not to be doubted that the district [*raion*] statistical inspectors are much at fault when it comes to the shortcomings of statistics [*uchet*] in the districts. It is incorrect to pass the buck to the chairmen of the district executive committees, blaming them for lack of attention to statistical matters. Comrade Stalin has pointed out that a true bourgeois statistician will suffer anything rather than attest

[4] *Plan*, 1935, No. 23, pp. 35f. The deliberations at the conference dealt primarily with agricultural statistics. See *ibid.*, No. 15, p. 41, and 1936, No. 11, pp. 37-39, for specific instances of political pressure on statistical personnel.

to a figure of whose accuracy he is not convinced. Are our own statisticians any different with regard to this elementary virtue possessed by the honest bourgeois statistician? They, too, have no right and dare not attest to an incorrect figure. Let anyone try to expel them from the Party, let some boob try to arrest them. There have been cases where district inspectors were threatened with arrest because they, like Bolsheviks (though not themselves members of the Party), fought for accurate figures. But the results were that the [political] leadership of the district was removed, while the inspector is still doing his work. Some inspectors consider that they can limit themselves to refusing to sign inaccurate reports; but this is not enough. False reports are sent to the *oblast'* and reach the center [Moscow]; the Central Committee and *SNK* must reach practical decisions on the basis of the materials at hand. The district inspector is obliged, therefore, to insist that the incorrect report, which may mislead the Party and the government, be stopped and corrected."

One has the impression from the context that the opening sentence of the quotation reflects more hope than conviction.

Speaking twenty years later at another conference of regional statistical workers, Kraval's successor, Starovskii, brought to the attention of his audience the fact that the charter of *TsSU* stipulates that statistical agencies be independent of local (political) organizations in their work. He hastened to add the interpretation: "Independence . . . means only that no local organization may force a worker in a [local] statistical administration or in a district or city inspectorate to change a figure if that figure is correct. Thus, the stipulation with regard to the independence of statistical agencies aims at assuring the truthfulness and reliability of statistical data."[5] However, he stressed, independence is not to be interpreted to mean that there should not be satisfactory working relations between statistical offices and political authorities on the local level.

Starovskii, at least as his words were reported in *TsSU*'s journal, did not elaborate further on the independence of statistical agencies from local authorities. But considering the pressure under which the various local political leaders in the Soviet Union operate, it would not be surprising if they attempted to transmit some of it in the direction where apparent successes come relatively easily, namely

[5] *V.S.*, 1955, No. 1, p. 82.

toward the statistical system. A vivid description of just such a situation is given in a recent newspaper article.[6] The article reveals that the *oblast'* statistical administrations were instructed[7] by *TsSU* to adjust the returns on milk production upward for underrecording in the *kolkhozy*. The article implies that the percentage correction varies from *oblast'* to *oblast'* and that an *increase* (at least) in this percentage requires permission from "Moscow." (Kursk applied a correction of 3½ per cent, later raised to 4 per cent; Belgorod—4 per cent.) According to the article, the statisticians of Kursk *oblast'* and of the RSFSR regard the adjustment as unnecessary and oppose it. Nonetheless, the statisticians of *TsSU* consider it justified, and the local political authorities espouse it, presumably as a means of improving the apparent accomplishments of their respective *oblasti*. However, the magnitude of the correction is said to have declined by one-half between 1954 and 1955, at least in the RSFSR. The article also notes that recording of milk output has improved lately.[8]

Of no less interest is the supposedly fictional reconstruction by the newspaper's correspondent of the conversation between the head of the *oblast'* government and the chief of the *oblast'* statistical administration. Faced with the demand to raise arbitrarily the percentage correction, the latter acts anything but independently of the former and is "glad" to accede to the demand, provided authorization is given from "above." The authorization is procured by dispatching the deputy head of the *oblast'* government to Mos-

[6] "S uchetom 'nedoucheta'" [Taking "Underrecording" into Account], *Izvestia*, April 6, 1956.

[7] The title of the instruction is given in the article as "Directives on the Computation of the Gross Output of Agriculture"; no date is indicated, but it is likely that the instruction was issued some time after the launching of the new agricultural program in mid-1953.

[8] Nancy Nimitz ("Soviet Statistics of Meat and Milk Output: A Note on Their Comparability over Time" (processed), The RAND Corporation, RM-2326, Santa Monica, 1959, pp. 26-29) finds that upward adjustment of the milk output reported by the collective farms was discontinued by 1956 according to some Soviet sources. Her study, however, directs attention to certain other—and more serious—questions regarding the comparability of Soviet statistics of meat and milk output over time. On problems connected with recent milk production statistics, see also Lazar Volin, "Milk Production in the Soviet Union: Recent Developments," Foreign Agricultural Service, U.S. Department of Agriculture, FAS-M-58, Washington, May 1959, p. 3. What remains unclear in Soviet milk production data (and unfortunately is not taken up in these two works) is the stability, or lack of it, of the average butterfat content of milk. There is evidence that the state records *its procurement* of milk in terms of a standard butterfat content for each major group of producer (see, for example, *Pravda*, July 17, 1957, p. 6).

cow; unfortunately, there is no account of how he goes about it "at the center."

This case pertains to agricultural statistics, as did the statement by Kraval' quoted above. It is possible that because of the specific conditions in this sector of the economy—a dispersion of producing units, a lower degree of centralized organization and control, smaller possibility of statistical precision, etc., the statistical agencies invite pressure from political authorities more readily with regard to agricultural statistics than with regard to industrial statistics. At any rate, I have not come across any evidence of such pressure with respect to industrial output data.

CHAPTER 7

Publication

THE physical output data, whose generation in the enterprise and confluent upward progress through the various hierarchies we have observed in the preceding chapters, eventually become consolidated and tabulated at the higher or highest levels in the central offices of *TsSU*, the regional statistical administrations, and the statistical bureaus of the ministries or *sovnarkhozy*. It is these consolidated statistics at top levels that presumably constitute the main source of the *published* output data, including the various statistical handbooks, as well as of the confidential materials that were circulated to some institutions and individuals during the years when no statistical handbooks were published for general use.[1] Some of the published data undoubtedly come to us not directly from the files of the statistical apparatus, but *via* such confidential materials. This is probably especially true of the isolated figures that used to be published sporadically in articles, speeches, and books before the publication of handbooks was resumed in 1956 and that constituted an important part of the statistical information on the Soviet economy that was available to outside observers for two decades before that year.

Two questions suggest themselves at this point:

1. Is there *numerical distortion* at publication? Are the published data numerically identical with the figures in the consolidated statistics and the confidential materials from which they are drawn? Or are they sometimes (or usually, or invariably) numerically falsified before revelation to the world at large?

2. Is there *descriptive distortion* at publication? That is to say, disregarding any numerical falsification, are the categories so described, or are the data presented in such a context, or with such ambiguity, as to mislead the reader?

[1] Such confidential materials are mentioned, for instance, by B. Martschenko ("Soviet Population Trends, 1926-1939," mimeographed in Russian, Research Program on the USSR, New York, 1953) in the passage quoted on pp. 113f. below. But even in the absence of such evidence, we could safely assume that a considerable amount of confidential information was circulated for use in planning, control, and economic administration. Nor need we doubt that confidential materials have continued to be circulated after the resumption of publication of statistical handbooks in 1956, as the latter clearly do not contain all the data, and in all the detail, necessary for planning, control, and administration.

I shall discuss the first question at some length; but the answer to the second question may be given immediately because it is so well known and obvious: there *is* patently a great deal of descriptive distortion (including ambiguity) that enters Soviet statistics at the time of publication.

Numerical Distortion at Publication

First of all, it is this question, i.e. the likelihood and extent of numerical distortion of Soviet statistics *at publication*, rather than at other stages of data flow, that is apparently typically raised by Western students when they ask "whether Soviet statistics are falsified" and that they usually answer in the negative.[2] I use the word "apparently" advisedly, for by and large the authors have not explicitly distinguished between the various stages in the flow of data at which distortion may take place. The possibility that the data may be distorted before they ever reach the "top," as we have seen a very real possibility indeed, has not received its due attention (except in Berliner's work, where however the problem of statistical accuracy is not central).

Bergson's concept of "falsification in the sense of free invention under double bookkeeping"[3] seems to refer to what I call "numerical distortion at publication." He is of the opinion that Soviet statistics—he is concerned here with more than just industrial physical output data—are not "generally" so falsified and that therefore they are not devoid of meaning. Most other Western students of the Soviet economy have at one time or another expressed similar views,[4] although of course they do not mean that presumptive ab-

[2] With the notable exception of Naum Jasny who has steadfastly asserted that Soviet statistics *are* falsified; see his works listed in the bibliography. But while he has shown in numerous specific instances that Soviet statistics (whether in value, index, or physical terms) are exaggerated, ambiguous, or nonsensical, and while falsification at *some* stage may well be involved in some of these instances, I am not aware of his having established (admittedly a very difficult thing to do) any specific instance of *numerical* falsification *at publication* of currently compiled (as against retrospectively estimated—see p. 116) physical output data.

[3] Abram Bergson, "Reliability and Usability of Soviet Statistics," *The American Statistician*, June-July 1953, pp. 21f.; and *idem*, *Soviet National Income and Product in 1937*, New York, 1953, footnote on pp. 7-9. By "double bookkeeping" he seems to mean the keeping of two sets of statistical compilations: one for the use of the Soviet authorities, and the other for release to the world at large. The term thus should not be confused with "double entry bookkeeping," a confusion that may also arise because Bergson discusses the problem in the context of his work on Soviet national accounts.

[4] E.g. Alexander Gerschenkron, "Reliability of Soviet Industrial and National

sence of falsification *in this sense* is sufficient to place a stamp of veracity and usability on all Soviet statistics.

Bergson arrives at his conclusion both a priori and empirically. In brief, his a priori reasons are: (1) "the probable difficulties of operating a double bookkeeping system on a national scale without detection," and (2) the withholding of data, amply practiced by the Soviets, as an alternative to double bookkeeping. Empirically, (1) he observes that "the data have withstood tolerably well a great many checks for internal consistency . . . [which] might be administratively difficult of attainment under double bookkeeping," as well as checks against other Soviet information and the reports of foreign observers, and, (2) he refers to Turgeon's collation of revealed data with those in the secret 1941 Plan, to which I shall return presently.

Bergson's a priori reasons have considerable plausibility, but, of course, cannot be conclusive by themselves. The second argument is, perhaps, the more cogent one, since it refers to something observable—the great elaborateness exercised in the withholding and selection of data, both in the large and in small (but not unimportant) detail. Innumerable instances of the withholding and selection of data at publication could be cited, but a single case, that of footwear statistics, will point up the problem sufficiently. Table 1 gives the annual percentage increase in footwear output for each year since 1949, as published currently in the regular annual plan fulfillment announcements by *TsSU*. The figures for the years 1949 through 1955 were presumably released at the time without anticipating an early publication of statistical handbooks, and are therefore of particular interest here. In addition, the table gives in parentheses changes in footwear output that were not revealed in the annual announcements, but which can be computed from the statistical handbooks that have been published since 1956. Table 2, while not central for the present argument, is offered to complete the picture. It reproduces the various planned targets for footwear output, and the actual output figures that have appeared

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Income Statistics," *The American Statistician*, April-May 1953, pp. 18-21. On the other hand, Naum Jasny (for example in "Soviet Statistics," *The Review of Economics and Statistics*, February 1950) has persistently objected to this formulation of Bergson's. However, his actual use of Soviet data does not seem to be essentially different from that of Bergson and most other Western (non-Communist) scholars. Bergson's reply to Jasny may be found in Bergson, *Soviet National Income, 1937*, footnote on pp. 7-9.

TABLE 1

Annual Percentage Increases in Footwear Output, 1949-1958

	1949	1950	1951	1952	1953	1954	1955	1956[a]	1957[b]	1958[b]
Leather footwear[c]	22	24	17	(−1)	(0.7)	7	(6)	(5)	10	12
Leather footwear— Ministry of Consumer Goods Industry only					4					
Rubber footwear	28	18	11	(0.6)	(−9.5)	3	(13)	8	(4)	(5)
Felt footwear							(−10)	(−1)	8	8
Footwear of all kinds[c]							7	(6)	(9)	(10)
Footwear[c]							(5)	5	(10)	(11)

SOURCE: Annual plan fulfillment announcements. Figures in parentheses are computed from data in Table 2.

[a] Based on old series (see Table 2).

[b] Based on new series (see Table 2).

[c] For definition of these terms, see text.

since 1956 in the statistical handbooks, all in absolute terms (i.e. million pairs).

To begin with, the term "leather footwear" is misleading since the category includes not only footwear made wholly of natural leather, but also that made of artificial leather, or only in part of natural or artificial leather, and often with canvas uppers. The cryptic categories "footwear of all kinds" and "footwear" appeared first (at least in postwar practice) in early 1956 in the fulfillment of the 1955 plan and the announcement of the Sixth Five-Year Plan, respectively, and were unclear to outside observers at the time. Since then the publication of the statistical handbooks has permitted them to be deciphered: "footwear" apparently is the simple summation (in pairs) of "leather footwear" and felt (or matted) footwear (*valianaia obuv', vkliuchaia fetrovuiu*); "footwear of all kinds" is a summation of "leather," felt, and rubber footwear.

Table 1 shows clearly how information was at the time withheld where a decline or an insignificant increase would otherwise be shown, and how categories were shifted to show the largest increase among the several alternative aggregates, at times with what appears to the outside observer as a deliberate extension of ambiguity. The decline or fractional percentage increase in the output of "leather footwear" in 1952 and 1953, of rubber footwear in 1952 and 1953, and of felt footwear in 1955 and in 1956 were passed over in

TABLE 2

Absolute Data on Footwear Output, 1948-1958
(million pairs)

	Leather Footwear	Rubber Footwear	Felt Footwear
1948, actual	134.0	71.1	
1949, actual	163.6	91.8	
1950, 4th FYP target	240	88.6	
1950, actual	203.4	110.4	22.4
1951, actual	239.7	122.5	
1952, expected actual as of Oct. 1952[a]	250	125	
1952, actual	237.7	123.2	
1953, actual	239.4	111.8	
1954, plan[b]	267		29.0
1955, plan[b]	318		33.5
1954, actual	257.8	115.8	27.2
1955, actual	274.3	131.4	24.5
1956, actual	289.8	141.2	24.2
1956, actual, new series[c]	286[d]	145[c]	
1957, actual, new series	317[d]	150.7[e]	26.4[e]
1958, actual, new series	355.8[e]	158.7[e]	28.5[e]

SOURCE: Except as otherwise indicated, actual figures are from *Narodnoe khoziaistvo SSSR* [The National Economy of the USSR], Moscow, 1956, pp. 58f.; *Promyshlennost' SSSR* [Industry of the USSR], Moscow, 1957, pp. 43, 351; and *Narodnoe khoziaistvo SSSR v 1956 godu* [The USSR National Economy in 1956], Moscow, 1957, p. 64.

[a] Malenkov's report at the XIXth Party Congress.

[b] Targets for the "new course" (*Pravda*, Oct. 28, 1953). The indicated target for leather footwear for 1955 is the same as the original Fifth Five-Year Plan target for that year.

[c] In 1957 the series for leather footwear and rubber footwear were revised, seemingly transferring some output from the former to the latter category. The revision has not been explicitly publicized, but retroactive adjustment of the two series appears in *Narodnoe khoziaistvo SSSR v 1958 godu* [The USSR National Economy in 1958], Moscow, 1959, pp. 228 and 273. The felt footwear series was apparently not affected.

[d] *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1958, p. 125.

[e] *Narodnoe khoziaistvo 1958*, pp. 228 and 273.

silence by the annual plan fulfillment announcements.[5] For 1955, 1956, 1957, and 1958, generally only the highest percentage increases were published in the yearly announcements. And for 1953, with "leather footwear" production increasing by less than 1 per cent, the authorities chose to announce only the respectable 4 per

[5] In fact, felt footwear was not mentioned at all in the announcements before 1957, although its output must have increased in some year(s) between 1950 and 1954. The reason for this is not clear. Perhaps in those years in-

cent increase in the output of "leather footwear" by the enterprises of the Ministry of Consumer Goods Industry alone.[6] We may recall that this announcement came at the height of the "New Course" with its policy of rapid expansion of consumer goods production. And we may note that in 1957 the leather footwear and rubber footwear series were redefined without warning.

Similar instances are doubtless known to anyone acquainted with Soviet statistics. Suffice it to recall the sharp cutback in published physical output data for industry in the late thirties, and again (though less sharp) in 1951. The subsequently published statistical handbooks have confirmed what was suspected at the time, namely, that the disappearance of the information was accompanied by declines in production. In short, the Soviet record of suppression of production data and juggling of published categories does indeed suggest that these devices are employed as alternatives to outright numerical falsification at publication, although, needless to say, this certainly does not preclude the possibility of such falsification.

Turning to Bergson's empirical reasons, the first—the fact that the data have withstood checks of consistency (especially of rigorous internal consistency)—is perhaps of less importance for our purposes than it was for his. Financial data based on double entry bookkeeping, on which Bergson largely based his national income studies, are more amenable to tests of internal consistency than are data on the physical output of industry. It is true that for a number of commodities, especially since the resumption of publication of statistical handbooks, the national production total can be checked against regional totals, although without further study it is difficult to say how conclusive such a check would be in a particular instance. *Ex post* balances may be constructed in the few cases where independent production, consumption, and foreign trade data are available. This can be done for steel for most of the thirties, and perhaps for a number of other commodities, such as some building materials, for certain years. In quite a few cases the data can be

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creases in the output of this traditional and "nonprestige" article were not considered worthy of publicity.

It should be noted that since the report for 1955, admission of decline in the output of an individual industrial commodity has been somewhat more frequent.

[6] The Ministry's predecessor was responsible in the 1941 Plan for only three-fourths of the national target for this commodity. (*Gosudarstvennyi plan razvitiia narodnogo khoziaistva SSSR na 1941 god* [The State Plan for the Development of the USSR National Economy for 1941], Moscow, 1941, p. 72).

checked with reference to certain posited input-output relations, but usually only broadly so because the input-output ratios may vary beyond narrow limits, or because there exist major alternative uses of the commodity (where the commodity in question is an input for purposes of the consistency check), or because the commodity (regarded as the output) can be produced by alternative processes, and so forth. Needless to say, we must avoid begging the question of changes in input-productivity when conducting consistency checks involving input-output relations. Further, output can be checked against production capacity if this is independently known, which is not often.[7] However, independent knowledge of capacity can at best give us upper limits of plausible production if we dispose of fairly certain maximum capacity utilization norms; by itself, it cannot give us a lower limit other than zero output. In a number of cases production data can be broadly checked against statistics of freight and cargo haulage, remembering, of course, that both output and freight statistics may be simultaneously overstated, as we have already seen. Even more loosely, production data can be checked against fragmentary external appearances: availability of consumer goods in stores; the clothing, etc., worn by or in the possession of individuals; the amount of construction going on; the industrial equipment or military "hardware" that can be seen; and so forth. Lastly, trends in retail prices may be suggestive of the supply of consumer goods.

In short, it is possible to conduct consistency tests for some industrial output data, but very few of them are likely to demonstrate the absence of inconsistency with reasonable conclusiveness. I should add that I know of no instance where a Soviet industrial *physical* output datum has been clearly demonstrated to be inconsistent with other information.

[7] In this connection I wonder whether Gardner Clark succeeded in conducting "a test of the reliability of Soviet statistics" when he found (*The Economics of Soviet Steel*, Cambridge, Mass., 1956, Appendix G) that, for 1940 and for 1948, the Soviet data on pig iron production, blast-furnace capacity, and blast-furnace productivity are mutually consistent within reasonable margins of error. It seems to me that the values of the nation-wide index of blast-furnace productivity are most likely directly derived from the corresponding values of pig iron production and blast-furnace capacity, and are not independent, as they properly should be for a consistency test. If Clark has shown anything about the accuracy of Soviet statistics, it is only that productivity figures inconsistent with the revealed or inferable output and capacity figures were not published, at least for those years. However, his calculation may have established—which, perhaps out of author's modesty, he did not mention—that his extrapolation of capacity to 1948 may have been quite accurate.

Bergson's other empirical argument rests on Turgeon's collation[8] of certain data in Voznesenskii's public speech on the 1941 Plan[9] and the corresponding data in the confidential version of the plan which has since become available in the West.[10] Of the 19 items compared, 15 are identical or diverge only to the extent of rounding; and while the other four[11] diverge substantially, the differences can be explained by the inclusion or exclusion of the recently annexed territories. Turgeon concludes: "It would be difficult indeed not to regard this close correspondence between published and confidential Soviet data as strengthening the position of those Western economists who believe, however misleading may be the way in which Soviet statistics are presented, they are not based on sheer invention, but have meaning and significance."[12]

Turgeon would have been more exact, however, if he had concluded that the published *plan targets* are substantially the same as the unpublished confidential ones. No definite inference can be drawn from this with regard to *statistics of accomplishment*, though one may add that the absolute 1941 Plan targets do not seem to be obviously inconsistent with the corresponding published achievements claimed for 1940.

There being hardly any positive evidence on the question of numerical fidelity at publication—Turgeon's useful experiment apart, some first-hand testimony is particularly welcome. It comes from B. P. Martschenko, one of the ablest émigré economists, who was formerly active professionally in the Ukraine, both under the Soviets and under the German occupation. In defending the reliability of the published data of the 1939 population census, he writes:[13]

"The primary processing of census data on population numbers was conducted in 1939 by the *oblast'* statistical administrations, and thus the *oblast'* totals were known to some of the personnel of *oblast'*

[8] Lynn Turgeon, "On the Reliability of Soviet Statistics," *The Review of Economics and Statistics*, February 1952, pp. 75f.

[9] N. A. Voznesenskii, *Khoziaistvennye itogi 1940 goda i plan razvitiia narodnogo khoziaistva SSSR na 1941 god* [Economic Report on 1940 and the Plan for the Economic Development of the USSR in 1941], Moscow, 1941.

[10] *Gosudarstvennyi plan 1941.*

[11] These are: total crop areas, gross grain harvest, turnover of state and retail trade, and number of elementary and secondary school children.

[12] Turgeon, *op.cit.*, pp. 75f.

[13] Martschenko, *op.cit.*, pp. 2f. My interpolations (in square brackets); his emphasis.

statistical administrations, though, of course, they were not subject to publication. In June, 1939, *TsUNKhU* published the census totals with breakdown by union republic, and specifically giving the figure of 30.96 million for the Ukrainian SSR. While the official publications did not break down this figure by *oblasti* of the Ukrainian SSR, beginning with 1940, and acting on the request of the scientific institutes of the UkrSSR, the statistical administration of the UkrSSR began passing on [to the institutes—G.G.] data on the population of the 16 *oblasti* (including the Moldavian Autonomous Republic) and the two cities of republic subordination (Kiev and Kharkov), expressed in millions to one decimal place. In 1941, shortly before the outbreak of the war, the statistical administration of the UkrSSR had printed a statistical compilation, entitled *Soviet Ukraine*, which was not placed on sale, but was distributed to various central and *oblast'* offices of the Party and Government, and was kept by these in their secret files. This compilation contained the same *oblast'* breakdown of the population of the UkrSSR.

"During the German occupation, 1941-1943, it became possible [for Martschenko] to check the authenticity of these official data by discussion with the former leading personnel of the Kiev Municipal Statistical Department and of the Statistical Administrations of two *oblasti*.[14] The [secret] data, which were passed on in 1940 by the Statistical Administration of the UkrSSR and were later incorporated in 1941 into the printed compilation put out by the Statistical Administration, did indeed correspond to the *oblast'* totals obtained by addition [of the returns] during the first few weeks after the census date. These totals were inclusive of the so-called "contingents," i.e. the numbers of prisoners in prisons and camps, broken down by *oblasti*, supplied by the *NKVD*. This leads us to conclude that the data on the 1939 census for the Ukraine, a republic which suffered one of the worst population deficits [due to collectivization of agriculture], were not falsified in the *central* statistical agencies. Hence, there is also reason to hold that the data are correct for the USSR as a whole, too.

"It must also be noted that the falsification of census data in the course of their processing in the *oblast'* statistical administrations would have been too unwieldy an operation, which would have inevitably become known to many persons in the statistical administrations, and could not have been concealed."

[14] As far as I remember, Kamenets-Podol'sk and Dnepropetrovsk [B. M.'s note].

A few paragraphs further, Martschenko seems to equivocate as to whether the same conclusion should be extended to economic statistics in general.[15] But on two later occasions, both, incidentally, in talks before less than completely receptive émigré audiences, he defended the nonfalsification thesis without reserve. Quoting again:[16]

"To postulate that the data of *TsSU* . . . are fictitious [in the sense of falsification at publication] would amount to postulating that there is duplicate planning in the USSR and a duplicate set of figures—one of which is intended for publication in newspapers and the specialized literature and the other printed somewhere else in earnest to guide economic administration in their work. But this cannot be assumed. Duplicate planning would be too unwieldy in practice, and besides could not be concealed from the eyes of the uninitiated. Soviet statistics resort to other means of inducing confusion and misinterpretation of data, which are more refined than the publication of simply invented absolute figures or percentages."

What does this evidence on the question of numerical distortion at publication add up to? We have Bergson's two a priori arguments of considerable, but not conclusive, cogency. They are supported by the opinion of a person of Martschenko's experience and by our own observations (as in the footwear example). We have Martschenko's recollection that secret population figures were identical with the published ones. We have Turgeon's experiment, which shows the near identity of officially released data and those not intended for publication, though for a plan rather than for statistics of performance. In general, it must be noted that (to my knowledge) no actual instance of substantial divergence between figures for public and for internal (official) use has yet been brought out, though perhaps that fact is of little weight considering the paucity of opportunity for this hitherto. And lastly, on the negative side, we must again note the limited possibilities of conducting rigorous consistency tests for industrial output statistics in physical terms.

The evidence is thus far from conclusive. But, while it certainly does not rule out numerical falsification of industrial physical output data at publication, it perhaps points to a mild presumption that

[15] Martschenko, *op.cit.*, p. 4.

[16] *V Konferentsiia* [Fifth Conference], Institute for the Study of the History and Culture of the USSR, Munich, April 25-27, 1955, pp. 219f. See also *VI Konferentsiia* [Sixth Conference], Munich, July 28-30, 1955, p. 120.

these published figures (with the exception to be noted in the next paragraph) are the same, though maybe numerically less precise, as those in the unpublished statistical compilations in the hands of the Soviet authorities. For reasons examined in the preceding chapters, this naturally need not mean that the released data are a faithful representation of the actual events; there is many a statistical slip 'twixt the production of goods and the publication of statistical handbooks. Nor should we assume that the statistical and governmental authorities themselves believe all their figures to be accurate—we know that they do not—or that they desist from publishing statistics of whose reliability they entertain serious doubts.

One more point should be mentioned before the subject of numerical distortion at publication is put aside, that is, retroactive estimates of magnitudes that were not compiled at all, or not in the desired form, at the time. Retrospective estimates of this sort, of course, do not pass through the channels of data flow that were described above, but are presumably made somewhere at the "center." They may well be made to prove a point—the point usually being, of course, that output in the earlier years was low compared to more recent production. Again footwear statistics may be used as an illustration. During the thirties Soviet statistical handbooks gave data on the output of large-scale industry only, which gave the impression of rapid growth. The commodity designation at its most precise was "footwear, except that of felt or rubber," which seems to correspond to what is now called "leather footwear." The first line of Table 3 reproduces the data in *Sotsialisticheskoe stroitel'stvo*, 1936 (see the reference in footnote b to additional production of rebuilt shoes for 1933 and 1934, and for those years only). The second line of the table reproduces the data in *Promyshlennost' SSSR*, 1957, which purport to cover all industry, i.e. including small-scale establishments. Note that nearly identical upward adjustments of over 28 million pairs were made in the latter source for 1928 and 1929, presumably to account for the output of small-scale establishments. (These adjustments may, however, be too small considering the relative importance of such establishments in the shoe industry at that time.) For 1930 and 1931, what was formerly given as the output of large-scale industry is now presented as the output of *all* industry, and for 1932 only a very small upward adjustment has been made (probably for reasons other than the inclusion of small-scale establishments). For 1933 and 1934, the figures now purporting to represent the output of all

TABLE 3

Output of Leather Footwear, 1928-1935
(*million pairs*)

	1928	1929	1930	1931	1932	1933	1934	1935
As given in 1936 for large-scale industry[a]	29.6	48.8	75.4	86.7	84.7	80.3[b]	75.5[b]	85.5[c]
As given in 1957 for all industry[d]	58.0	77.0	75.4	86.7	86.9	90.3	85.4	103.6

[a] From *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1936, p. 206.

[b] In addition, output of rebuilt footwear was given in source as 10.0 mill. pairs in 1933 and 9.9 in 1934.

[c] Preliminary.

[d] From *Promyshlennost'*, 1957, p. 351.

industry are identical with the totals of newly produced and rebuilt shoes, but for large-scale industry only. And for 1935, again, a substantial (though perhaps inadequate) upward adjustment has been made, presumably to include small-scale establishments.[17]

Descriptive Distortion at Publication; Ambiguity

As we noted early in this study, the line between numerical and descriptive distortion is not a precise one, and in some respects, such as the passing off of the output of large-scale industry as that of all industry, the case just discussed illustrates descriptive distortion at publication as well. Many other forms of descriptive (including contextual) distortion in published Soviet statistics are known to students of the Soviet economy: unheralded changes in definition; comparisons of incomparable categories; no allowance for territorial change; biased selection of the base year and other standards of comparison; presentation of plan targets for past years as actually attained magnitudes;[18] and others. It would be futile to attempt to list all the pitfalls in the interpretation of Soviet statistics, even of only the industrial physical output data. In the final analysis, each figure must be tested separately and on its own ground for possible descriptive distortion, always bearing in mind what it is

[17] A similar critique of footwear statistics is given in Naum Jasny, *The Soviet 1956 Statistical Handbook: A Commentary*, East Lansing, 1957, pp. 81f.

[18] Again with regard to footwear, see *V.E.*, 1953, No. 8, p. 25, where the output of footwear in 1952, as foreseen in Malenkov's speech at the XIX Party Congress in October of that year, is represented as the actual output for 1952. As we now know, the actual output was smaller.

that the statistics are "trying to prove." But a few generalizations may be ventured.

Thus, obviously, the more direct the statement, the less the likelihood of descriptive distortion. For example, absolute figures are generally preferable to percentages, since the latter require probing into the meaning of the numerator as well as of the denominator, and into the comparability of the two. Also, the shorter the period spanned, the lower the chances of an intervening definitional change.

All detail and nuances of description and definition should be heeded. The chances are that the detail has been transferred from unpublished data, where it may have meaning and purpose. For illustration I refer back to the data on footwear in Tables 1 and 2 earlier in this chapter. Quite clearly, the Soviet statements at the time did not necessarily mean "leather footwear" when they said "footwear" *tout court*, but it is amazing how many Western commentaries of the Sixth Five-Year Plan assumed that the latter must stand for the former. Another example is the transition in the late forties from the term *zhilaia ploshchad'* (dwelling area) to the phrase *zhilye doma obshchei ploshchad'iu* (dwellings with a total area of), which (as we now know) was associated with a change in the basis of measurement of aggregate housing space.[19]

Finally, the exact location of the datum in the body of the handbook, plan fulfillment report, speech, and so on, should be carefully noted, for it may not only yield a clue to the meaning of the datum, but also, by indicating its origin, shed light on its reliability. This is so because the statistical compilations from which the published statistics are drawn are standardized in two senses. The statistical categories (designations of commodities and commodity groups) and the units of measurement are at any one time standardized, necessarily so because of the elaborate planning and reporting system. A corollary of this is the fact that (short of sheer invention, of course) the figure(s) for only the standard category or categories, and in the specified units, that happen to exist in the statistical compilations can be published for any particular period or point of time. Further, judging by the published plans, fulfillment announcements, and major speeches, the unpublished compilations are very likely organized in a certain sequence of subjects which changes.

[19] In this connection, one wonders whether the sudden change in usage in the late forties from *narodnyi dokhod* (people's income) to *natsional'nyi dokhod* (national income) was not more than a change in wording.

little from year to year. Topics and items succeed each other with a set regularity, and it is a fair guess that when the speaker finishes the discussion of industry he will turn to agriculture, then to transportation, then to capital construction, and so forth. That is to say, there is a definite sequence of contexts in the materials from which the published data are drawn.

The classic example concerns the perplexing parallel existence of "small" and "large" wage funds. Wiles has pointed out[20] that the two have tended to appear in different contexts, the former in relation to living standards and the latter in relation to anti-inflationary considerations, which suggests differences in derivation and thus provides a clue to the difference in coverage and meaning.

But one of the most bothersome problems in the interpretation and handling of Soviet physical output statistics is likely to be insufficient descriptive precision, in other words, ambiguity, especially the ambiguity of commodity designations. In the plans, fulfillment announcements, statistical handbooks, and similar documents, the commodity designations are very broad. Not only are such categories as "equipment for the petroleum industry (in tons)" or "steam locomotives, main-line (in units)" or "knitted outer garments (in million units)" highly heterogeneous, but even such seemingly "simple" commodities as pig iron, coal, cement, and (as we have seen) electric power are not entirely homogeneous, and in most cases are quite heterogeneous.[21] To complicate matters further, certain commodities are assimilated into the specified commodity items by means of conventional conversion coefficients. Thus, ferroalloys enter into the pig iron figure, building stone and similar materials apparently often enter into the structural brick figure, and so forth. Indeed, Tseitlin points out that in the law on the Fourth Five-Year Plan (which listed targets for well over fifty industrial

[20] P. Wiles, "Average Wages in the USSR," *Bulletin of the Oxford Institute of Statistics*, September 1953, pp. 327ff. See also A. Bergson, "A Problem in Soviet Statistics," *The Review of Economic Statistics*, November 1947, pp. 234-242, for a statement of the wage fund problem.

[21] Thus, for most years Soviet statistics simply give a global figure for the output of "rolled steel (in tons)." Until the mid-thirties a breakdown into about two dozen types was also published (see *Sotsialisticheskoe stroitel'stvo*, 1936, p. 135). *Promyshlennost'*, 1957, gives a breakdown into 14 types, but only for 1940, 1950, and 1955. On the other hand, rolling mills have to report, apparently daily, their output of rolled steel broken down into 34 types, and many more subtypes (see Ia. D. Kats, *Promyshlennaia statistika na predpriiatiiakh chernoi metallurgii* [Industrial Statistics in Iron and Steel Enterprises], Moscow, 1957, pp. 35-37).

commodities) only a few industrial items—such as electric power, petroleum, natural gas, and most processed foodstuffs—were expressed in "truly" physical units (which, of course, does not yet mean that they are strictly homogeneous commodities). He goes on to say:[22]

"Iron and steel products, the larger number of items of producer equipment, agricultural machinery, and even forest products and building materials, are expressed [in the Fourth Five-Year Plan] only nominally in physical units. Actually they are expressed in conventional units; in part in 'conventional physical' [*uslovno-natural'nye*] units, and in part in 'conventional statistical' [*uslovno-uchetnye*] units. Examples of conventional physical units are the unit of measure of soap [i.e. in terms of solid household soap of 40 per cent fat content—G.G.] and the 'conventional can' for canned goods. Examples of conventional statistical units, i.e. indicators not related to the utility [*potrebitel'skaia otsenka*] of the product, are the measurement of pig iron by weight, as well as many others. It is clear that these two concepts are not mutually exclusive, but that one is subsumed under the other; i.e. conventional physical units must be regarded as a variety of conventional statistical units."

The problem of ambiguity in commodity designation, like the problem of descriptive distortion, must be analyzed and (if possible) resolved separately in every individual case. Needless to say, each case will have its own pattern and dimensions of heterogeneity, including its specific problems of product mix. Consider the commodity "woolen fabrics," which is given in meters with no breakdown for most years. By type of cloth, its composition (in per cent of the total) was as follows for different years:[23]

[22] M. A. Tseitlin, "O natural'nom izmerenii promyshlennoi produktsii" [On Measuring Industrial Output in Physical Terms], *Nauchny zapiski* [Scientific Notes], Leningrad, 1955, p. 53. The reference to pig iron presumably alludes to the inclusion of ferroalloys in the pig iron category at certain conversion coefficients, and perhaps to the fact that these coefficients in some sense do not properly express the relative "utility" of pig iron and of the various kinds of ferroalloys. On the other hand, it is not quite clear why the author apparently does not regard number (as, for instance, the number of motor vehicles—be they trucks, passenger cars, or buses) as a "truly" physical unit of measure.

[23] The first four columns are from A. M. Korneev, *Tekstil'naia promyshlennost' SSSR i puti ee razvitiia* [The USSR Textile Industry and Ways of Its Development], Moscow, 1957, p. 149; the last three columns are from

	1913	1927/28	1932	1940	1940	1950	1955
Worsted	53.0	41.9	14.2	30.6	30.0	39.5	39.6
Fine woolens	21.5	33.4	47.4	37.7	43.0	38.1	43.5
Coarse woolens	25.5	24.7	38.4	31.7	27.0	22.4	16.9

The percentage of real wool (though apparently not necessarily virgin wool) in the fiber changed as follows during the First Five-Year Plan:[24]

	1927/28	1933
In the production of worsted	98.1	85.0
In the production of fine woolens	45.3	19.4
In the production of coarse woolens	66.4	33.4

I have no information on the average width of a meter of woolen fabric in the earlier years, but from 1940 to 1955 it declined slightly: from 128.5 cm to 126.6 cm.[25] From these data alone, and without considering the many other aspects of the commodity "woolen fabrics," it is quite clear that the average quality or value of a meter of the commodity fluctuated greatly over time, and that it declined sharply during the First Five-Year Plan. (If other aspects of quality could also be taken into account, the decline in average quality may well be even greater.[26]) It is also clear that the global figures for woolen cloth in meters, which is all that we have for most years, are a very crude approximation of the output of the woolen textile industry.

The situation is similar for many other commodities. For instance, to refer briefly once again to footwear statistics, "leather footwear," as we have seen, is in fact footwear other than that made of rubber or felt, and contains in varying proportions not only natural leather (which in itself is not of uniform quality) but also artificial leather, canvas, and perhaps other materials. Further, in type, the footwear

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Promyshlennost', 1957, p. 330, and pertain only to the USSR Ministry of Light Industry.

[24] Korneev, *op.cit.*, p. 149.

[25] *Ibid.*, p. 277. These figures are said to refer to *finished* woolen fabrics.

[26] Korneev (*ibid.*, pp. 142f.) points out that while the output of woolen fabrics in linear meters (i.e. disregarding product mix and quality) rose by 38 per cent from 1928 to 1940, the official index of the output of the woolen textile industry (including wool washing) rose by 154 per cent in the same period. After mentioning the increase of primary processing of wool by factory industry (which enters into the index), and quality changes, he says in a footnote that "an explanation of the reasons for the disparities [between the physical increases and the rise in the official indexes of various branches of the textile industry] would require a separate inquiry which we cannot now undertake because the materials are not available."

may vary from heavy, knee-high, traditional Russian boots, to the lightest of sandals or slippers. It can be men's, ladies', or children's footwear. As we have seen, it can be entirely new or rebuilt. And, of course, it can (and does) vary greatly in quality; much is substandard judging from complaints in the Soviet press. But it still enters the statistics as pair for pair.[27]

Since it is often a shortage of the raw material that contributes to the deterioration in quality and in the product mix, perhaps the tentative generalization can be made that, in the short run, changes in quantity of output and in average quality tend to be positively correlated. Thus, for certain commodities the uncorrected physical output series may tend to overstate the production in the "poorer" years in comparison with the adjacent "better" years. Of course, which years are which can be ascertained only by a careful study of the industry in question.

[27] Actually, this is not always the case. There may be some writing up in this respect, even apart from the recording of *brak* as valid output. "An Odessa shoe factory was producing ladies' shoes of above-average quality. Yet every pair of ladies' shoes was entered in the records not as such but as two pairs of children's shoes, which would have required the same amount of leather. This was done to evade payment of the turnover tax, since children's footwear is not subject to it" (*Finansy* SSSR, 1958, No. 6, p. 48).

Summary and Conclusion

THE Soviet statistical system has been shaped by the needs of central planning and by the logic of administering a command economy, including the control and supervision functions that the latter implies. Industrial production statistics have rested, since the early years of the Plan era if not before, on continuous, comprehensive, detailed, and frequent reporting by the producing enterprises (except the smallest ones which are subject to periodic censuses). Commodity nomenclature is standardized, units of measure are specified, and standard reporting forms are prescribed. A good deal of methodological and definitional uniformity and consistency has apparently been achieved within the structure of reporting and between statistics and planning. A large and elaborate statistical apparatus, headed by the Central Statistical Administration (*TsSU*), has been built up. This apparatus receives data from the producers; processes, consolidates, and tabulates them; submits the results to various authorities; and publishes a certain amount of statistical information. Since 1948 the statistical apparatus has been organizationally separate from the planning apparatus, probably in order to make it a more effective check on the planners.

Soviet authorities thus dispose of very detailed and up-to-date industrial production information based on direct and comprehensive reporting of output. Physical planning and the operation of a command economy require this. On the debit side, we must note two principal considerations: the high cost of generating and communicating the information, and defects in its reliability.

The volume of economic reporting in the Soviet Union is exceedingly great, and the resources devoted to the recording, reporting, and processing of data are correspondingly large. Whatever advantages it may enjoy on other scores, a command economy suffers from a distinct handicap compared to a market-organized system in terms of economy of information. In the Soviet case this cost has been compounded in various other ways related to the nature of the socio-political order, as well as by very slow progress in the mechanization of statistical work and accounting. But reliability, not cost, is the main concern of this study, and I shall turn to it in this concluding chapter after digressing briefly to take note of two qualifications.

First, it must be stressed that this is not a comparative study of

the quality of statistics in the USSR and other countries. Whether Soviet statistics in general, and the statistics on industrial physical output in particular, are or are not in some relevant respects better than those of another country remains to be established by a separate investigation. Suffice it to mention here that information is rarely an end in itself, and that therefore any comparative study of this sort must take into account the sharply varying needs of different economic systems with regard to the volume, comprehensiveness, promptness, and precision of production data (above the level of the individual firm). Secondly, it must be remembered that this study is concerned with the statistics of *industrial output.* That is to say, it focuses on the production of commodities by industrial enterprises, and ignores the subsequent fate of the goods in the distribution network and their state of readiness for use by the consumers, be they producer goods or articles of final consumption. It would hardly be necessary to make this point had not the discussion in the preceding chapters heavily stressed the effect of systemic considerations on the reliability of reported production statistics. It is therefore appropriate to note that systemic considerations—especially Soviet-type planning, the command economy and the associated structure of incentives, and the sellers' market—are not neutral as to the degree to which the products of industry reach consumers or are usable by them.[1] It would seem, for example, that

[1] To illustrate: (1) The rates of breakage and spoilage in distribution channels are apparently very high in the USSR. For instance, it has been said that "usually" only 65 to 70 per cent of window glass sheets reach construction sites unbroken (article by Magnushevskii in *P.E.G.*, Aug. 23, 1957, p. 3). No doubt a substantial proportion of this damage is due to the carelessness of suppliers, which in turn is occasioned by the system of incentives and the sellers' market. (2) Deliberate destruction of producer goods may take place when performance is measured not by output but by the consumption of an input. The wanton spilling of gasoline mentioned in footnote 108, Chapter 5, is a case in point. Another example is the deliberate scrapping of unused structural steel by a construction enterprise because the apparent consumption of steel determines the volume of building accomplished, i.e. determines the degree of plan fulfillment (*Komsomol'skaia pravda*, March 30, 1958). An extension of the same principle is the waste of resources involved in maximizing the production of a service which is the end activity for the enterprise in question, but is only an intermediate good for the economy; e.g. the well-known excessive plowing done by the machine and tractor stations (which were largely abolished in 1958), or the unnecessary ton-miles (actual, not written up) hauled by trucks, in order to overfulfill their respective plans. (3) The goods received by the customer often deviate considerably from his specifications, and he is often forced to adapt the goods to his needs at considerable cost to himself (cf. G. E. Paraubek, "Nekotorye voprosy kachestva stroitel'stva" [Some Questions of the Quality of

an international comparison of volumes of industrial output, based to be sure on production data and concerned primarily with the comparative reliability of such data, cannot entirely ignore considerations of this sort.

Let us return now to the quality, and especially the reliability, of industrial output statistics in physical terms. The published figures are the end result of a long chain of statistical steps, beginning with the actual event and its primary recording. For present purposes this chain may be divided into two main stages: the successive recording, consolidating, and reporting of production data until they reach the highest levels in the statistical apparatus; and the publication of statistics, presumably based on these data. The problems raised by the two stages are quite different. The first stage brings up primarily questions of the numerical accuracy of the reported information. The second stage does this too, but in addition it raises serious questions of descriptive (including contextual) distortion, ambiguity, and (though not considered in this study) biased selection of data for publication. It is therefore desirable to separate the two sets of questions for analytical purposes. The user of Soviet industrial output statistics should bear in mind that with regard to any specific figure he may be the victim of one or both of two separate circumstances: the distortion of the information submitted to the authorities, and the distortion of the economic picture by the authorities in their publications.

To recognize the existence or likelihood of deception at the vari-

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Construction] in *Voprosy ekonomicheskoi effektivnosti novoi tekhniki v stroitel'stve* [Problems of Economic Efficiency on New Construction Processes], Moscow, 1958, p. 315; Vlasov in *P.E.G.*, July 13, 1956, p. 2). Again systemic considerations (e.g. the long lines of communication between expression of need and decision to produce, the system of incentives, the sellers' market) are undoubtedly responsible.

To pursue the last point somewhat further. By definition, more costs typically fall on, and fewer benefits (such as discounts) typically accrue to, the buyer in a sellers' market than in a buyers' or "neutral" market. Hence international price ratios, whether of producer or consumer goods, with the prices of, say, the sellers' market economy in the numerator, such as ruble-dollar price ratios, will tend to be biased downward in terms of what may be called "effective prices" to the buyer, if not in terms of transaction prices. This bias is augmented by the tendency of consumers (industrial or individual) in a sellers' market economy to become self-suppliers because of the undependability of external supplies, and to produce such goods at costs that often considerably exceed transaction prices, as indeed the Soviet literature amply attests to. The last, of course, is less true where self-supply aims primarily at avoiding or evading excise taxes, for instance, turnover taxes on consumer goods.

ous stages of the chain connecting reality with published data is not necessarily to subscribe to what, for want of a better term, may be called the "nihilistic position." This is the view, sometimes held and propagated by former Soviet political and economic officials, that any data published in the USSR are nothing but sheer manipulation for political purposes, and that, moreover, the reports submitted to the Soviet authorities from below contain such a large element of falsification, or even pure invention, that all Soviet statistics are utterly worthless for any serious purposes.

"Believe no figure that is published; for it is false or correct according to what the needs of the situation dictate," a German prisoner reports having been told by former functionaries of the Party's Central Committee and other old Party members who were fellow prisoners in a Soviet camp. And still others, economists or former managers, are said to have warned him repeatedly that "basically everything concerning our figures is sheer manipulation to achieve confusion; their handling is a science in itself." The reason: "Had we not developed corruption and manipulation of all plans, in the large and in the small, to the highest art and science, we would not have been able to execute any plan to any extent. Only the organizing force of our corruption and manipulation enables us to overcome to some extent the plan-wise chaos."[2] Similarly, Berliner was told by a former Soviet economist and ministry official, one of his "most reliable informants," that "the Soviet system of enterprise administration, the method of calculating the degree of success of the work of the enterprise and the system of financial operations are founded upon an enormous amount of falsification in all branches of production and in their accounting systems. Not a single enterprise, if it worked in full accord with all orders and decrees of the government and planning organs, would be able to function without interruption. Every day, for the sake of production, the official norms are violated, everywhere there is evasion, false figures, untrue reports, and so forth."[3]

Putting aside for the moment the question of distortion at publication, can we conclude from eyewitness testimony of this sort that

[2] Wilhelm Starlinger, *Die Grenzen der Sowjetmacht*, Würzburg, 1955, pp. 73f.

[3] Joseph Berliner, *Factory and Manager in the USSR*, Cambridge, Mass., 1957, p. 160. Berliner adds: "Perhaps these words are too strong. The statement cries out for quantitative evidence which in the nature of the case is not to be forthcoming."

the physical output data reported to the Soviet authorities, and consequently also the published statistics drawn from them, are devoid of meaning—at the worst a collection of Tippetts' numbers, or at best statistics that cannot possibly be comprehended by outsiders? I do not think so, for the following reasons:

1. As we saw in the preceding chapter, the published industrial output statistics (in physical terms) do make some sense, in that they do generally meet certain rough tests of internal and external consistency wherever such tests are possible and have been tried. Hence, the reported data that underlie the published figures must presumably also make some sense.

2. Certain known principles of Soviet managerial behavior, such as the universal quest for easy plans, indicate that there must be definite limits to falsification in reporting by the enterprise.

3. True, some of the data reported by enterprises and other entities undoubtedly have a very tenuous relation to reality, if any. This is probably especially so where the reported event or situation leaves no, or few, lasting traces to attract the attention of subsequent audits or inspections. A statistic of this kind is, for example, the percentage of the factory's staff that was covered by "socialist competition" in a given period. Such Soviet figures may indeed be worthless. But data on the physical output of industry are not of this order. They are probably much less subject to distortion from below than are many other Soviet statistics, not because there is little incentive to distort—there is plenty—but because of the limits placed on such distortion by the interests of customers, the difficulties of concealing large inventory shortages, the controls over the distribution of products and the allocation of inputs, the attention of authorities to this key segment of the economy, the possible severe penalties, and so forth.

4. Those who hold the "nihilistic" position are understandably impressed by the prevalence of cynicism and corruption in Soviet society, by the occasional daring feats of falsification on a large scale, and by the ingenuity involved in some cases. Yet it does not necessarily follow that the consolidated figures for whole industries bear no ascertainable relation to reality. In the vast majority of the actual cases of falsification of industrial output data described in the Soviet press, or recounted by such eyewitnesses as Berliner's informants and Tsonev, the relative magnitude of distortion is quite modest from our point of view (if not from the point of view of the Soviet statistical authorities).

5. Even if the data as they stand are patently unreliable, they can sometimes be adjusted to yield more or less satisfactory figures on the basis of various types of internal or external evidence. (Of course, if one believes that *no* figure published in the USSR is at all reliable, then there is also no basis for adjustment.)

But rejection of the "nihilistic" position is not tantamount to issuing a bill of health of Soviet statistics. We saw in Chapter 4 that the statistical authorities have been, and continue to be, seriously concerned about the reliability of the data submitted to them by enterprises and higher-level entities, although naturally they do not choose to reveal any quantitative estimates of the distortion in the reported data. We also examined in Chapters 4-6 much evidence on the presence of a substantial amount of data distortion, including falsification. However, this evidence is largely nonquantitative, and in considerable measure even aprioristic; in the few cases where it is quantitative, it is very fragmentary. Thus, while we can draw certain qualitative conclusions (that distortion exists, that in certain branches and at certain times it is likely to be greater or smaller than in other branches or at other times, that certainly it is in one direction or the other, and so forth), we are not able to estimate the quantitative extent of distortion in the information reported to the central authorities.

The problem of reliability of reported data is deeply rooted in the nature of the Soviet command economy. The output reports submitted by the enterprises and their administrative superiors simultaneously constitute the factual basis for national production statistics, provide the information for planning and the issuance of production orders, and determine the rewards and punishments meted out to the management and the rest of the production personnel. The rewards for plan fulfillment and overfulfillment by the enterprise are great; the punishment for failure may be severe. At the same time, within the enterprise, most of the workers are usually remunerated according to their own "norm" fulfillment and overfulfillment. Success with the plan or norm also brings various side benefits and advantages. Thus, disinterestedness in the reporting of output by the worker to his superiors, or by the enterprise to its administrative superiors (and at the same time to the statistical administration), is virtually ruled out. Nothing like the disinterestedness or boredom of the French subprefect who, in the early part of the last century, for thirty years sent the government the

same set of figures for the industrial production of his district[4] is conceivable in the Soviet case.

The structure of incentives therefore pushes the worker (or foreman) and the enterprise itself, and perhaps even the enterprise's superiors, to simulate plan fulfillment and to write up output. For reasons adduced earlier (Chapter 5), write-ups by workers may affect the recording of finished industrial goods less than the recording of intermediate operations, and may be less serious in industry than in construction. But they apparently do tend to distort commodity output statistics in an upward direction, although from the evidence at hand it is impossible to say for which commodities and to what extent.

More serious seem to be the manipulations by management. It is clear that management does at times, perhaps even fairly often, engage in write-ups "pure and simple," though again it is impossible to estimate their incidence and quantitative importance. In many cases the write-up is simply "borrowing" output from the succeeding period. The amount "borrowed" may often be small in relation to the annual rate of output and may be repeated at the end of each reporting period. This practice, although prevalent, may thus affect Soviet production statistics relatively little, especially over the longer run. Other kinds of write-up however may exaggerate the figures more seriously. Probably the most serious kind of write-up, and one that may have a considerable upward effect on the commodity production figures, is the widespread inclusion of *brak* (spoilage, rejects, substandard goods) and incompletely assembled articles in the reported finished goods totals.

The pressure to fulfill the plan, which is specified in physical units or in value terms derived directly from physical units, leads the Soviet industrial enterprise to stress sheer quantity of output at the expense of other dimensions of the product. I have called this the tendency toward the devaluation of the specified physical unit of measure (Chapter 5). The dimensions of the product other than the specified one are, first, quality in a general sense, and, secondly, other quantitative dimensions (e.g. if the specified unit is a weight unit, the other quantitative units may be area, count, size, etc.). The enterprise can often manipulate to some extent the other quantitative dimensions of the product, and it will tend to choose the *intra-*

[4] Mentioned by the French historian Michel Chevalier and cited by Arthur L. Dunham in *The Industrial Revolution in France, 1815-1848*, New York, 1955, p. 405.

commodity assortment that will maximize plan fulfillment in terms of the specified physical unit of measure.

Not all the tendencies operate toward the overstatement of output in physical terms; often the enterprise underreports its production. This may be deliberate, e.g. write-downs to conceal the illegal appropriation or diversion of the product, or it may be unintentional, merely reflecting prior theft or pilferage of the product. However, one gets the distinct impression from the evidence at hand that, on the whole, underreporting is a less serious problem than write-ups.

How can management get away with deliberate write-ups and write-downs, and with devaluing the intracommodity assortment? Are there not severe administrative and criminal sanctions provided for such offenses as inaccurate reporting, reduction of quality, deviation from standard specifications, and the production and outshipment of *brak*? Are there not a multiplicity of controlling and supervising agencies and a host of auditors and inspectors constantly keeping the enterprise and its personnel under surveillance? There are indeed, but, as we saw in the section on checks to distortion in Chapter 5, these safeguards, sanctions, and checks are frequently ineffective. Those persons within the enterprise whose duty it is to control the quality of output, to safekeep inventory, and to ensure the accuracy of records and reports—the quality inspectors, the chief accountant, the storekeepers, and so forth—are often loyal primarily to the enterprise rather than to the regime or to abstract principles; they are often part of a "web of mutual involvement" holding together the responsible officials of the firm and may be for various reasons under the manager's domination. Administrative superiors (*glavk*, ministry) may overlook the transgressions of enterprise management because their own criteria of success coincide with those of the firms. Outside authorities (the Party, the Procuracy, etc.) may be ignorant of the facts, or, if not, may be reluctant to stir up trouble, or may simply be bribed to look the other way. And lastly, potentially the most effective type of check, that by the transactors (the buyers of the products, the common carrier), is also far from perfect. The common carrier often does not verify the declared quantity of the shipment and besides may welcome exaggeration of the quantity as a help to fulfilling its own haulage plan. And because of the sellers' market, the buyer is often in a weak position to object to poor quality, inclusion of *brak* or incompletely assembled goods in the shipment, departure from

specifications and distorted assortment, and perhaps even shortages in quantity.

Where so little is firmly known, generalization is very difficult, and therefore the following considerations are offered merely as illustrative hypotheses.

1. The tendency to write up output probably increases with the following:

a. The approach of the end of the plan period. The last month of the year and the last year of the Five-Year Plan probably witness more extensive write-ups, as the pressure on management to fulfill plans is heightened.

b. Diminution in the supply of inputs. Since management is often not allowed to excuse itself by pointing to the absence of supplies, there must be a strong tendency to solve the production problem statistically by "borrowing" output from the future.

c. Excess of demand for a product over supply, which allows the producer to "chisel" on quality and quantity with relatively little risk of effective opposition from the buyers.

d. Heightening of pressure on producers for whatever reason.

e. The significance of premiums in the earnings of managerial personnel.

f. The importance of piece rates in the remuneration of workers.

2. The tendency to write up output probably varies inversely with the following:

a. The "countervailing power" of the buyer, that is, the degree to which the buyer can resist shipments that are low in quality or short in quantity. The contrast between industries working for the military effort and those working for the consumer comes immediately to mind in this connection.

b. The possibility of conducting effective inventory audits. For instance, commodities handled in bulk may permit of easier concealment of inventory shortages than, say, machinery.

c. The importance of continuous production processes. Write-ups, either by management or by workers, are probably more difficult to carry out in continuous production than in lot or batch production. Over the long run, this factor may tend to reduce the upward bias in Soviet output statistics.

d. The stability of input-output ratios. The more stable such ratios, the more limited, it would seem, are the possibilities of simulating performance.

3. Deliberate quality deterioration being an alternative to write-ups as a method of simulating performance, the two may vary inversely over the short run, depending on the particular side from which "the heat is on." Over the longer run they may vary together, since both are responses to the same set of circumstances, such as the severity of the plans, the efficiency (or inefficiency) of the supply system, the structure of rewards, the harshness of the political atmosphere, etc.

4. The replacement of one specified physical unit of measure by another, or the aggregation or disaggregation of the commodity category in the enterprise's plan (i.e. smaller or greater detail in production planning from above), may create a discontinuity in the commodity series. A change-over in the specified physical unit of measure is likely to bring about rapid adjustment in intracommodity assortment to maximize physical output under the changed circumstances. Thus a chained series of the output of the commodity in physical terms, linked in some fashion at the period of the change-over, is likely to show greater growth (smaller decline) than if the series were expressed either in the old or the new unit throughout. Similarly, an aggregation of the commodity category in the enterprise's plan probably furnishes the management with additional scope to manipulate intracommodity assortment to its advantage and thus to devalue the physical unit of measure; disaggregation would seem to work in the opposite direction (see Chapter 5).

5. The tendency for output to be underreported depends on the nature of the commodity, and particularly on whether it can be profitably and conveniently pilfered by workers or diverted by management into illicit channels. For instance, pilferage by workers might be expected to be much more prevalent in consumer goods industries than in heavy industry and where the goods are portable than where they are bulky (though we have noted exceptions).

The tendency for output to be underreported might also be expected to vary directly with: (a) general consumer privation, and especially its aggravation; (b) shortages of consumer goods in stores and the level of open market prices for them, i.e. generally speaking the degree of repressed inflation; (c) difficulties in the supply of producer goods, which might induce management to engage in various barter operations, which in turn may entail the deliberate writing down of output; and (d) the extent to which enterprises are self-suppliers. (These considerations are discussed at greater length in the section on underreporting in Chapter 5).

The effect of underreporting, therefore, is probably to exaggerate the production statistics of certain goods, particularly consumer goods, during such "hard times" as the early thirties, the war and immediately after the war compared with more "normal" times. But, on the other hand, this effect may be partly or wholly offset by the deterioration in quality and intracommodity assortment associated with the "hard times."

Nove has suggested that since "one could legitimately invoke . . . 'a law of equal cheating': over the economy as a whole, there is no reason to suppose that Soviet managers and their accountants falsify more in one year than in another, so the *rate of growth* is unlikely to be exaggerated on that account."[5] One could add that if the assumption is "legitimate" for the economy as a whole, it is perhaps at least as "legitimate" for an individual series. However, as we have seen, the conditions that determine the degree and direction of distortion may well vary from year to year; and convenience, or perhaps inevitability, and not legitimacy is likely to be the stronger justification for the assumption. Usually we simply lack the quantitative information necessary to adjust for the failure of the "law of equal cheating." And so we must grudgingly keep the law on its unmerited throne, supplementing our findings with qualitative caveats and provisos. This is especially likely to be the case in international (rather than temporal) comparisons. The point at which the qualifications nullify the assumption is, as in so many other respects, for the investigator and his conscience to decide in each particular instance.

Turning finally to distortion of statistics *at publication*, we encounter a completely different set of problems. Distortion by the reporting enterprises has meant essentially numerical distortion. While we cannot be certain that Soviet authorities do not practice numerical distortion in transferring the figures from their unpublished consolidated statistics to published material, we saw (Chapter 7) that so far this has not been demonstrated, although the opportunities of demonstrating it have admittedly been very meager indeed. At any rate, several empirical and a priori considerations led us to a weak presumption that there probably is no *numerical* distortion (falsification) of physical output data in the published Soviet statistics. Instead, a distorted picture of reality is very definitely presented by suppression and selective release of data, biased

[5] A. Nove, "The Pace of Soviet Economic Development," *Lloyds Bank Review*, April 1956, p. 3. His italics.

choice of bases of comparison, deliberate ambiguity in nomenclature and other categories, and so forth. It is inadvisable to proffer any general principles for the interpretation or rejection of statistics that are manipulated in this manner, except perhaps to reiterate that one question must always be uppermost in the investigator's mind: what are the figures trying to prove?

Abbreviations

RUSSIAN TERMS USED IN THE TEXT

brak	Defective output, spoilage.
glavk	Chief administration.
Gosplan	*Gosudarstvennyi planovyi komitet Soveta Ministrov SSSR* [State Planning Commission of the USSR Council of Ministers]. This is the full name since May 1957. It has been slightly altered several times since the *Gosplan* was established in 1921.
kolkhoz	Collective farm.
krai	Territory.
MVD	*Ministerstvo vnutrennikh del* [Ministry of Internal Affairs].
NKVD	*Narodnyi komissariat vnutrennikh del* [People's Commissariat of Internal Affairs].
oblast'	Province.
OTK	*Otdel tekhnicheskogo kontrolia* [Department of Quality Inspection].
Prombank	*Promyshlennyi bank* [Industrial bank].
raion	District.
SNK	*Sovet narodnykh komissarov* [Council of People's Commissars].
sovkhoz	State farm.
sovnarkhoz	*Sovet narodnogo khoziaistva* [Council of the Economy].
TsIK	*Tsentral'nyi ispolnitel'nyi komitet* [Central Executive Committee].
TsSU	*Tsentral'noe statisticheskoe upravlenie* [Central Statistical Administration].
TsUNKhU	*Tsentral'noe upravlenie narodnokhoziaistvennogo ucheta* [Central Administration of Economic Record-keeping].
VSNKh	*Vysshyi sovet narodnogo khoziaistva* [Supreme Council of the Economy].

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B.F.Kh.Z.	*Biulleten' finansovogo i khoziaistvennogo zakonodatel'stva* [Bulletin of Financial and Economic Legislation].
B.U.	*Bukhgalterskii uchet* [Accounting].

P.E.G.	*Promyshlenno-ekonomicheskaia gazeta* [Industrial and Economic Gazette].
P.Kh.	*Planovoe khoziaistvo* [Planned Economy].
P.Zh.	*Partiinaia zhizn'* [Party Life].
S.Z.	*Sotsialisticheskaia zakonnost'* [Socialist Legality].
V.E.	*Voprosy ekonomiki* [Problems of Economics].
V.S.	*Vestnik statistiki* [Statistical Herald].
Z.I.	*Za industrializatsiiu* [For Industrialization].

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